Sources of Hazardous Substances in the PASSAIC RIVER STUDY AREA

POTENTIALLY RESPONSIBLE PARTY:

Ashland Chemical Company

PREPARED BY:
MAXUS ENERGY CORPORATION
ON BEHALF OF THE
OCCIDENTAL CHEMICAL CORPORATION

INDEX OF DOCUMENTS IN SUPPORT OF COMMENTS CONCERNING ASHLAND CHEMICAL COMPANY

TAB A **Tables Summarizing Liability of Ashland Chemical Company**

The Foundry site table illustrates that hazardous substances used on-site by Ashland and found in the soil and groundwater were also found in significant concentrations in sediment samples adjacent to the Roanoke Avenue combined sewer outfall. The Doremus site table illustrates that hazardous substances from the Doremus facility discharged to the Passaic River.

TAB B **Documents Demonstrating Hazardous Substance Used At Foundry Facility**

1979 Tank Listing, Resource Conservation Recovery Information System Report and other documents indicate that hazardous substances, including o-dichlorobenzene, p-dichlorobenzene, maleic anhydride, phthalic anhydride, chlorobenzene, ethyl benzene, bis (2 ethyl hexyl) phthalate and di-n-octyl phthalate were used or stored at the Foundry facility.

TAB C **Excerpt from 1971 Passaic Valley Sewerage Commission Annual Report**

Report states that flammable and explosive materials from the Foundry facility discharged to the Roanoke Avenue combined sewer outfall.

TAB D **1979 Letter from Passaic Valley Sewerage Commission**

Letter notes that spills from the tank truck cleaning area flowed to catch basins at the Foundry facility and discharged to the Roanoke Avenue combined sewer outfall.

TAB E **1983 New Jersey Department of Environmental Protection, RCRA Inspection Report**

Report documents that neutralized waste product from acid drumming operations at the Foundry facility was disposed of through the PVSC sewer line.

TAB F — **Excerpts from Groundwater Technology Reports and T.M. Gates Reports**

Documents confirm that soils and groundwater at the Foundry facility are contaminated with chlorobenzene, 1,3 dichlorobenzene, 1,4 dichlorobenzene, 1,2 dichlorobenzene, phenanthrene, fluoranthene, bis (2 ethyl hexyl) phthalate and a variety of other hazardous substances.

TAB G — **Excerpts from Passaic Valley Sewerage Commission Bi-Monthly Reports**

Report documents that Ashland was aware that condensate and washed out solvent would spill onto the ground and flow to catch basins at the Foundry facility and then discharge to the Roanoke Avenue combined sewer outfall. Report also notes that substances spilled to the ground at the Doremus facility discharged to the Passaic River.

TAB H — **Excerpt from T.M. Gates Report**

Report documents spill of fuel oil at the Foundry facility. Report also notes that standing water accumulated at the Foundry facility and subsequently discharged to the Passaic River. The Report also indicates that acid drumming wastes and line flushing wastes were disposed of into the sanitary sewer. Finally, the Report documents that for many years the Foundry facility had an under-drain system to collect contaminated groundwater which was treated only with an oil/water separator before being discharged to the PVSC sewer.

TAB I — **Excerpt from Groundwater Technology Report of Findings Soil and Groundwater Investigation**

Report states that surface water runoff from the Foundry facility discharges to the City of Newark combined storm and sanitary sewer system.

TAB J — **Ashland Chemical Company, Division of Ashland Oil & Refining Co., 400 Doremus Avenue**

Report notes that Ashland used maleic anhydride, fumeric anhydride and solvents at its Doremus facility. The report also documents that Ashland discharged waste waters from the Doremus facility to the sanitary sewer line.

TAB K **1970 Interstate Sanitation Commission Memorandum**

Memo documents that cooling water from the Doremus facility containing copper, zinc, and chromium discharged to the Passaic River.

TAB L **New Jersey Department of Environmental Protection, Environmental Cleanup Responsibility Act, Site Evaluation Submission**

Report documents that in 1976 the sanitary sewer line ruptured and discharged to Newark Bay. At the time of the discharge, approximately 20,000 pounds of caustic wash had been discharged into the sanitary sewer.

TAB M **New Jersey Department of Environmental Protection, Environmental Cleanup Responsibility Act, Initial Notice**

Report notes that oil spilled to the ground at the Doremus facility discharged to the Passaic River.

TAB N **Environ Corporation Cleanup Plan for Spencer Kellogg Facility**

Report documents that soils at the Doremus facility are contaminated with hazardous substances including ethyl benzene, toluene, and other volatile organics.

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ASHLAND CHEMICAL COMPANY
SUMMARY
FOUNDRY STREET

COMPANY	TYPE AND YEARS OF OPERATION	HAZARDOUS SUBSTANCES STORE/USED/ PRODUCED AT FACILITY	HAZARDOUS SUBSTANCES IN SOIL AND GROUNDWATER AT FACILITY	DOCUMENTED DISCHARGES OF HAZARDOUS SUBSTANCES TO RIVER	OTHER PATHWAYS TO DISCHARGE HAZARDOUS SUBSTANCES	HAZARDOUS SUBSTANCES USED AT FACILITY OR FOUND IN SOIL OR GROUNDWATER IDENTIFIED IN PASSAIC RIVER SEDIMENTS ADJACENT TO ROANOKE CSO
Ashland Chemical Co. 221 Foundry Street Newark, New Jersey	Since 1968, the company has received and stored on site a wide range of specialty chemicals. These chemicals were repackaged into smaller bulk lots for distribution. Ashland also processed and blended solvent mixtures on site.	Dioxin precursors o-dichlorobenzene chlorobenzene maleic anhydride phthalic anhydride p-dichlorobenzene Other ethyl benzene trichloroethylene methylene chloride xylene toluene naphthalene benzene acetone methyl ethyl ketone di-n-octyl phthalate di-n-butyl phthalate 1,1,1 trichloroethane bis (2 ethyl hexyl)phthalate tetrachloroethylene mineral spirits 140 Solvent Hi Sol 10 Hi Sol 15	Soil ethyl benzene toluene benzene chlorobenzene 1,3 dichlorobenzene 1,4, dichlorobenzene 1,2 dichlorobenzene acetone xylene methylene chloride 1,1,1 trichloroethane trichloroethylene tetrachloroethylene acenaphthene anthracene benzo(a)anthracene benzo(a)pyrene benzo(g,h,i)perylene bis(2 ethyl hexyl) phthalate chrysene dibenzo (a,h) anthracene di-n-butyl phthalate flouranthene fluorene indeno(1,2,3-cd) pyrene 2 methyl naphthalene phenanthrene pyrene mineral spirits 140 Solvent Hi Sol 10 Hi Sol 15	1971 PVSC report documents discharge of highly polluting flammable and explosive materials from Ashland property to the Roanoke Avenue sewer and thence the Passaic River. 1976 report notes spills from tank tuck cleaning area which flowed to catch basins that discharged to the Roanoke Avenue storm sewer and thence the Passaic River. In 1983 NJDEP Inspectors documented the presence of products in the storm sewer. In addition, neutralized waste product from acid drumming operations was discharged to the sewer.	Surface water runoff from contaminated soils at the facility. Wastes discharged to the sanitary sewer which were bypassed to the Passaic River through the Roanoke Avenue combined sewer outfall.	o-dichlorobenzene(430 ug/kg) p-dichlorobenzene(1,300 ug/kg) 2,3,7,8 TCDD (130 ng/kg) Total TCDD (1,180 ng/kg) ethyl benzene (680 ug/kg) xylene (2,500 ug/kg) di-n-butyl phthalate(38,000 ug/kg) di-n-octyl phthalate(170,000 ug/kg) naphthalene (43,000 ug/kg) benzene (75 ug/kg) toluene (870 ug/kg) methylene chloride(37 ug/kg) acetone (8000 ug/kg) methyl ethyl ketone(94 ug/kg) bis(2 ethyl hexyl)phthalate (150,000 ug/kg) 2 methylnaphthalene (38,000 ug/kg) acenaphthene (86,000 ug/kg) fluorene (100,000 ug/kg) phenanthrene (280,000 ug/kg) anthracene (96,000 ug/kg) flouranthene (180,000 ug/kg) pyrene (140,000 ug/kg) benzo (a) anthracene (72,000 ug/kg) chrysene (82,000 ug/kg) dibenzo (a,h) anthracene (19,000 ug/kg) benzo (a) pyrene (54,000 ug/kg) indeno (1,2,3-cd)pyrene (32,000 ug/kg) benzo (g,h,i)perylene (23,000 ug/kg) arsenic (33.4 mg/kg) lead (669 mg/kg) cadmium (7.9 mg/kg) chromium (207 mg/kg) copper (683 mg/kg) nickel (178 mg/kg)

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COMPANY	TYPE AND YEARS OF OPERATION	HAZARDOUS SUBSTANCES STORE/USED/ PRODUCED AT FACILITY	HAZARDOUS SUBSTANCES IN SOIL AND GROUNDWATER AT FACILITY	DOCUMENTED DISCHARGES OF HAZARDOUS SUBSTANCES TO RIVER	OTHER PATHWAYS TO DISCHARGE HAZARDOUS SUBSTANCES	HAZARDOUS SUBSTANCES USED AT FACILITY OR FOUND IN SOIL OR GROUNDWATER IDENTIFIED IN PASSAIC RIVER SEDIMENTS ADJACENT TO ROANOKE CSO
			<u>Groundwater</u> benzene xylene chlorobenzene methylene chloride ethyl benzene toluene arsenic lead cadmium copper chromium nickel 1,1,1 trichloroethane trichlorethylene Mineral spirits Hi Sol 10 Hi Sol 15			

ASHLAND CHEMICAL COMPANY
SUMMARY
DOREMUS AVENUE

COMPANY	TYPE AND YEARS OF OPERATION	HAZARDOUS SUBSTANCES STORED/USED/ PRODUCED AT FACILITY	DOCUMENTED DISCHARGES OF HAZARDOUS SUBSTANCES TO RIVER/NEWARK BAY	OTHER PATHWAYS TO DISCHARGE HAZARDOUS SUBSTANCES	HAZARDOUS SUBSTANCES USED AT FACILITY OR FOUND IN SOIL OR GROUNDWATER IDENTIFIED IN PASSAIC RIVER SEDIMENTS ADJACENT TO SITE
Ashland Chemical Co. 400 Doremus Avenue Newark, New Jersey	From 1968-1978, Ashland manufactured specialty chemical products including alkyd resins, plasticizers and resins.	<u>Dioxin precursors</u> maleic anhydride phthalic anhydride <u>Other</u> fumeric anhydride polyols solvents toluene xylene copper zinc	In 1970, cooling water containing copper, zinc, chromium and TSS was discharged to the Passaic River. In 1976, the on-site sanitary sewer line ruptured and an unknown amount of caustic wash leaked into the Plum Creek flume. In 1977, approximately five gallons of pamak (96% vegetable oil and 4% resin) spilled onto the ground and discharged into Newark Bay. Later in 1977, approximately five gallons of oil discharged from the Ashland facility to Newark Bay.	Contaminated storm water runoff from the Ashland facility. Contaminated water from firefighting efforts as a result of five explosions at the facility including a 1978 explosion of a phthalic anhydride tank.	No samples adjacent to the facility have yet been analyzed.

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State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF HAZARDOUS WASTE MANAGEMENT
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APR 3 1991

MEMORANDUM

TO: Linda Grayson, Chief
Bureau of Planning and Assessment

FROM: Doug Stuart, Acting Chief
Bureau of Compliance and Technical Services

SUBJECT: Responsible Party Investigation
Foundry Street Complex
(AKA Arkansas Chemical, Hummel Chemical)
185 Foundry Street, Newark, NJ

The Bureau of Compliance and Technical Services' Special Investigation Section has prepared the attached Responsible Party Investigation Summary for the subject case to assist the Bureau of Planning and Assessment in its site evaluation.

Please be advised that referenced key documents are maintained in this bureau's files. Should you have any questions in this matter, do not hesitate to contact me at (609) 633-0708.

lmc
c Y. Yacoub, Chief, MBFO
P. Smith, Investigator, SIS/BCTS
B. Patterson, ECRA
RPIU File

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FOUNDRY STREET COMPLEX
AKA ARKANSAS CHEMICAL AND HUMMEL CHEMICAL

SUMMARY

The Foundry Street Complex consists of six separate parcels of land, Lots 4 (Block 5005); Lot 5 (Block 5005); Lot 6 (Block 5005); Lot 10 (Block 5005); Lot 21 (Block 5005); and Lot 22 (Block 5005), see Attachment 1. The site is located in the Iron Bound Section of Newark and is situated between Foundry Street on the east, the former Manufactures Railroad on the west, and Roanoke Avenue on the north. Bordering the southern portion of the site is the New Jersey Turnpike.

Approximately 30 small buildings are situated throughout the complex. The buildings are separated by narrow driveways which have strip-like drains in the middle of the lane. These drains are connected to an industrial sewer line on Roanoke Avenue and receive surface water run-off and industrial discharge from companies in the complex. The complex is easily accessible from numerous locations.

Historically, the Foundry Street Complex has been occupied by a variety of chemical manufacturing industries. One of the first known companies associated with the site was Central Dyestuff and Chemical Company (CDC), a New Jersey Corporation. CDC acquired the property in three different portions from Waldron Brothers Realty Company, Municipal Investment Company, and part of the premises known as Plum Point Lane duly vacated by the City of Newark. CDC manufactured color specialties which included oranges, fast reds, scarlets, browns, chrysoidine blacks, oil soluble colors, and a large variety of colors and dyes used for cakes, varnishes, inks, stains, straw, leather, etc.

On August 13, 1930, Central Dyestuff and Chemical Company merged with Consolidated Color and Chemical Company (CCC). The latter name was retained by the new corporation which continued to operate on site.

In January of 1936, Arkansas Company, Inc., a New York Corporation, executed a three year lease for space in buildings designated as #16, #24, #26, #27, #28, #32 and #35 with CCC. Consolidated Color and Chemical gave Arkansas the sole right and option to purchase the demised property. However, this option expired on October 31, 1938. After executing the lease with Arkansas, CCC changed their name to H.A. Metz & Company Inc., a New Jersey Corporation, on March 2, 1936. H.A. Metz & Company name was changed to Roanoke, Inc., a New Jersey Corporation, on May 24, 1937.

In January, 1939, Roanoke, Inc. sold the property which now consists of Lots 4, 5, 21 and 22 to Chemical Industries, Inc. for a sum of $10.00.

Prior to the sale of the premises, a ten year lease which became effective February 1, 1939, was negotiated between Arkansas Company, Inc., Chemical Industries, Inc. and Roanoke Inc. Arkansas Company's new lease still contained the right and option to purchase the premises which expired on November 1, 1943. Apparently, Arkansas and Chemical Industries, Inc. had negotiated the sale of the property before the November 1 deadline. The

sale was finalized on December 27, 1943. The Newark Tax Map now designates this property as Lot 5 (Block 5005).

ARKANSAS COMPANY, INC.

Arkansas Company, Inc. (Arkansas Chemical) manufactured textile chemicals at the facility which included chelating agents, dye carriers, emulsifying agents, fire retardants, fungicides, resin finishes and water repellents.

In 1975, Arkansas was issued a Notice of Violation (NOV) by the U.S. EPA, Region II, for failure to implement a Spill Prevention Control and Countermeasure Plan for a 20,000 gallon storage tank containing No. 6 fuel oil. It is not known if any penalties were assessed against Arkansas for the violation.

Arkansas Chemical sold the property (Lot 5) to Galaxy, Inc. on February 23, 1978, but continued to operate on the premises as a tenant. The City of Newark foreclosed upon the property, for unpaid taxes, in September of 1983. Both Arkansas and Galaxy, Inc. subsequently filed for bankruptcy, under Chapter 11, in the United States Bankruptcy Court for the District of New Jersey.

Sometime thereafter, Arkansas Chemical ceased operations at the facility. NJDEP personnel discovered approximately 250 abandoned 55 gallon drums on the property during a site inspection on April 30, 1984. Labels found on the drums indicated that they contained benzene chloride, perchloroethylene, methanol, silane, isophorondiisocyanate, lactic acid and polyethylene glycol. Some of the drums were noted leaking their contents. Oil spillage was discovered on the rear portion of the property where open containers of petroleum products were stored.

The Division of Waste Management (DWM) issued a Directive Letter to Arkansas on September 21, 1984. Arkansas was directed pursuant to the Spill Compensation and Control Act, to immediately initiate remedial measures at the site which included: Securing access onto the site; listing all materials stored on site within fourteen days upon receipt of the directive; and properly removing and disposing of all containers and contaminated soil in accordance with Department regulation.

Howard S. Greenberg, registered agent for Arkansas, informed the NJDEP by letter dated October 3, 1984, that remedial contractors were being sought. A supplemental letter dated October 23, 1984, provided the names of potential contractors which included: Atlantic Remedial Constructors, Inc., Clean Venture, Inc. and Rollins Field Service, Inc. The letter also stated that Elson T. Killian Associates had been hired to oversee cleanup activities. A cleanup proposal was submitted by Clean Venture, Inc. in November, 1984.

Approximately 500 additional drums were discovered in building No. 28 during a subsequent inspection. Many of the drums were labeled for corrosive, flammable and poisonous materials. An unspecified number of five gallon pails were also found in an outdoor shed.

The United States Bankruptcy Court authorized funds to secure the drums. On January 3, 1985, Cycle Chem commenced cleanup operations by moving drums located in the outside yard into building No. 28A. This phase of the cleanup was completed on the following day. No further actions were taken in this response.

CWC Realty Company made a "contract of sale" for Lot 5, with Galaxy, Inc. on May 10, 1985. The sale of the property never occurred due to a potential costly cleanup.

In 1986, the City of Newark took steps to secure the buildings of Arkansas Company, Inc. Such efforts proved to be ineffective. Vandals routinely broke into the buildings and were responsible for a fire which occurred at the facility. The buildings on the property began to deteriorate due to leaks in the roof. This allowed rain to enter the buildings and caused drums stored inside to corrode and release their contents.

The USEPA Region II Technical Assistance Team took control of the Arkansas Chemical facility in January, 1987. A cleanup commenced shortly thereafter and continued over the next two years. By February 2, 1989, all hazardous materials which consisted of base neutrals compounds, acids, cyanides, flammables, peroxides, halogenated organics, oxidizers and organics were removed from the facility. EPA's response did not include remediation of contaminated soils and ground water.

LOT 4, BLOCK 5005

Kem Realty Company purchased Lot 4 (Block 5005), 96-144 Roanoke Avenue, from Chemical Industries Inc. on May 8, 1962. The City of Newark subsequently approved a subdivision of the lot on January 6, 1964. Approximately 0.87 acres was taken from the northeast corner of Lot 4 and designated as Lot 21 (Block 5005).

HUMMEL LANOLIN CORPORATION

Hummel Lanolin Corporation (HLC), a wholly owned subsidiary of Croda Inc., EPA ID #NJD002175016, manufactures lanolin and lanolin derivatives used as formulation aids for the cosmetic industry. HLC began operating on the property as a tenant in the late fifties.

On February 28, 1964, Hummel Lanolin purchased Lot 21 from Kem Realty. The property contained a single building that was built in 1947 by Chemical Industries, Inc. Apparently, this building was once used to store food and flavor ingredients by Masehmeirer Aromatics, before it was occupied by HLC. In 1964, a warehouse was constructed and an extension was made to this warehouse in 1969-1970.

HLC blended mixtures of lanolin and lanolin derivatives with mineral oils, paraffin waxes, fatty acids, and alcohols. The manufacturing of lanolin involved four stages. Wool grease was first heated until it became a liquid and sodium chloride, citric acid, and trisodium EDTA were then added. Next, hot water was sprayed over the mixture which settled overnight. Fatty acids contained in the mixture were neutralized with isopropanol, soda ash, and caustic soda solution. The mixture was then aggregated and allowed to

settle overnight once again. Upon completion of this process, the product was ready for washing and bleaching. In this stage, soap stock and interface used to clean the lanolin were drawn off the mixture and pumped to a tank for subsequent treatment. The remaining grease was washed a second time to remove any residual soap and allowed to air dry. A hydrogen peroxide solution was then used to bleach the wool grease.

Soap stock and wash water generated from the manufacturing process were neutralized with either sulfuric acid or hydrochloric acid to free water insoluble fatty acids. The fatty acids would float to the surface and the remaining acid solution was pumped to another tank where it was neutralized with caustic soda or soda ash to a pH of 5.5. The neutralization solution was discharged into the Passaic Valley Sewerage Authority. Fatty acids recovered from the neutralization process were recycled in lanolin derivatives.

In September of 1986, Hummel Lanolin Corporation entered into an "Agreement of Sale" of the premises with Custom Foil Company, Division of CWC Industries. The prospective sale of the property activated the Environmental Cleanup Responsibility Act. Consequently, HLC hired Dames & Moore, an environmental consultant, to investigate the property and determine if any potential sources of contamination existed on site. The location of a former underground storage tank was one of the major environmental concerns of the ECRA investigation. Borings made in the vicinity of the tank revealed the presence of petroleum hydrocarbon (PHC) contamination. Soil samples collected at a depth of 5.0 - 5.5 feet contained higher levels of PHCs than samples collected at the base of the tank. Dames & Moore attributed the contamination to spillage from tank refilling operations. Base neutral compounds (B/N) were also detected in three of the soil samples taken near the tank.

The presence of B/Ns warranted further investigation and a ground water investigation was conducted by Dames & Moore. During the installation of monitoring wells in the area of the former underground storage tank, a black sludge like material was encountered in the location of monitoring well #1. A soil sample collected from a soil boring made near this monitoring well on August 13, 1987 contained volatile organic compounds (VOC), B/Ns, pesticides (i.e. Beta BHC and delta BHC) and priority pollutant metals. Dames & Moore concluded that the contamination was probably due to a leak in the sewer line which passes underneath the property and receives waste from an electroplating company (Automatic Electro-Plating) located upgradient of the sewer line.

Additional sampling was conducted to determine if the contamination was from an on site or off site source. Six soil borings (B1-B6) were made throughout the southwest portion of Lot 21 and one sediment sample was collected from a manhole in the sewer line located upgradient of HLC's process building. The soil samples and sediment sample contained VOCs, metals, and PHC. B/Ns and pesticides (i.e. heptaclor, aldrin, 4-4' DDT) were only detected in the soil samples.

Floor drains in the process building were also investigated as a potential source of contamination. A soil sample (BSW-1) was collected from beneath a floor drain in the southwest corner of the process building in September,

1988. The drain was the closest to where the sludge contamination existed and contained VOCs, B/N and metals below ECRA action levels. The floor drains were determined not to be a source of the sludge material.

A third possible source investigated was Hummel Lanolin's drainage basin. The basin was used to collect effluent samples before being discharged into the industrial sewer system. The basin and pipe connected to the sewer was cleaned out on October 14, 1988. During the clean out, a black liquid flowed into the basin from the industrial sewer line. Dames & Moore collected one sludge sample (WC-1) and one liquid sample (WC-2). Both samples contained VOCs, PHCs and total cyanide. Sulfides and corrosivity were below EPA maximum levels. Sample WC-1 also contained five B/Ns, below method detection limits, and priority pollutant metals (i.e. cadmium, copper, lead and zinc). Similar metals were detected in the upgradient manhole in the main industrial sewer. It should be noted that the drainage basin is located downgradient of the sludge contamination. The sludge contamination was determined to originate from an off site source (i.e. via the industrial sewer).

LOT 22, BLOCK 5005

A major subdivision of Lot 4 (Block 5005), was approved by the City of Newark, Central Planning Board, on March 1, 1971. Consequently, Lot 22, 159-169 Foundry Street, was formed from the southern portion of Lot 4. Kem Realty Company conveyed this new parcel containing approximately 1.65 acres to the Foundry Street Corporation on May 3, 1971. The Foundry Street Corporation leases the property to Automatic Electro-Plating Corporation, Sun Chemical Corporation, and Fleet Auto Electric.

SUN CHEMICAL CORPORATION

Sun Chemical Corporation (Sun), Pigment Division, EPA ID #NJD002458842, manufactures quincridone pigments in buildings #23, #31, #32, #33 and #34 located on the eastern portion of Lot 22 (See Attachment 2). Polychrome Corporation, Cellomer Division, operated here prior to 1967.

Quinacridone pigments are highly colored, insoluble pigments, and range in color from red to violet. The pigments are used in the automobile industry, printing inks, and plastics. Quinacridones are produced by the cyclo dehydration of dianilino-terephthalic acids in polyphosphoric acid.

Sun uses two basic methods to produce red and violet pigments. The red pigment is made by mixing polyphosphoric acid and dianilino-terephthalic acid together and heated, to dehydrate the dianilino-terephthalic acid. The substance is pumped to another tank containing water and the slurry produced is heated under reflux, then pumped through a filter press where the crude pigment is collected. Effluent from the press which consists mainly of phosphoric acid, is pumped to a storage tank for subsequent removal off site. The crude pigment is refluxed a second time with glacial acetic acid and the finished product is pumped to a filter press for collection. Spent acid generated from this process is pumped to a tank where it is neutralized with caustic soda and discharged to the Passaic Valley Sewerage Commission.

In producing violet pigment, polyphosphoric acid and dianilino-terephthalic acid are mixed together and heated, to dehydrate the dianilino-terephthalic acid. The remaining material is added to methyl alcohol and refluxed for several hours. Water is added and the mixture is distilled to recover some of the alcohol. The alcohol is later reused.

The mixture is pumped to a filter press where the pigment is collected. Effluent generated from the process, consisting of alcohol and phosphoric acid, is pumped to a neutralization tank for treatment with caustic soda. After the pH is adjusted, the effluent is discharged into PVSC. Magenta pigments are made the same way except 2,5-di-p-toluidino-terephthalic acid or 2,5-di-(p-chloroanilino) telepathic acid is used as the starting material.

Originally, Sun Chemical was identified as a hazardous waste generator and TSD facility on their RCRA Part A application. TSD activities included storage in tanks (S02) and treatment in tanks (T01). In April of 1988, the Bureau of Hazardous Waste Engineering (BHWE) delisted the company's status to a generator only since waste were no longer stored on site for more than 90 days.

Sun is classified as a Industrial Waste Management Facility (IWMF) under the New Jersey Water Pollution Control Act, due to the on site neutralization of waste. Caustic soda is used to neutralize process effluent in two interconnected 1,500 gallon above ground storage tanks situated between Buildings #23 and #31. The treated effluent is discharged into a sump connected to an industrial sewer located on the adjacent property (Lot 4) owned by Norpak Corporation. Sun discharged its effluent into the strip drainage system located on the west side of the plant before the installation of the waste water treatment unit.

The Passaic Valley Sewerage Commission (PVSC) regulates the discharge under Permit #2040-1042 and requires the pH to be between 5.0 and 10.5. Sun is exempt from obtaining a NJPDES permit because it is considered an elementary neutralization unit. The facility qualifies as an elementary unit since the wastes neutralized are only considered hazardous due to the corrosivity characteristic.

Some of the company's hazardous waste is transported off site to Industrial Solvents in Pennsylvania. Industrial Solvents reclaims the solvent portion of the phosphoric acid and methanol/isopropanol mixture. This is sold back to Sun Chemical.

Sun Chemical Corporation entered an agreement for the sale of the Foundry Street facility with Sun/DIC Acquisition Corporation. In October, 1986, Recon Systems Inc. conducted sampling at the facility as part of a preliminary acquisition survey. Samples consisting of one soil, one sediment, and one swipe sample taken of an oily stain on the boiler room floor. The sediment and soil samples contained VOCs, PHCs, PCBs and priority pollutant metals. PCBs were detected in the swipe sample.

Consequently, both parties signed an ECRA Administrative Consent Order (ACO) on December 30, 1986. The ACO required Sun to install monitoring wells so that ground water quality could be investigated. Recon Systems Inc. collected ground water samples from three monitoring wells throughout the

facility on September 19 and November 10, 1989. The sample results indicated that ground water was contaminated with VOCs, B/Ns, PHCs and priority pollutant metals. The concentrations detected exceeded ECRA action levels. However, the contamination appeared to be coming from an off site source.

As a result of potential off site contamination, five additional monitoring wells were installed at Sun Chemical. Ground water samples were collected from the eight monitoring wells on August 23, 1990. These samples contained elevated levels of VOCs, B/Ns, PHCs and priority pollutant metals.

The DWR, Bureau of Ground Water Control recommended that additional background sampling be conducted to verify off site sources of contamination in March of 1990. Recon Systems Inc. in an attempt to verify such sources, investigated the integrity of the drainage system (strip drains) and sewer system. Video inspection of the sewer system revealed that the sewer lines contained numerous cracks and separations between the pipes. The inspection also noted that the strip drains were connected to the sewer system on Sun's property.

On July 17, 1990, four sediment samples and one water sample was collected from catch basins and the sewer system on the property. The samples contained elevated levels of VOCs, B/Ns, organic acids, cyanides, and priority pollutant metals. Recon Systems Inc. investigative findings concluded that contamination could have migrated onto the facility through the drainage system and leaks in the sewer system.

It was also indicated that reoccurring flooding of the drainage system may have distributed past sources of contamination throughout the facility, resulting in the scattered pattern noted on the premises. Furthermore, "ground water contamination appeared to be a regional problem not directly attributable to Sun Chemical".

FLEET AUTO ELECTRIC

The western portion of Lot 22 is occupied by Fleet Auto Electric and Automatic Electro-Plating Inc. (AEP). Fleet Auto Electric rebuilds electrical parts (i.e. generators, alternators for cars) in building #29 which is located immediately adjacent, and on the west side of Sun Chemical (See Attachment 2). The company has operated in the building since the early seventies.

AUTOMATIC ELECTRO-PLATING CORPORATION

Automatic Electro-Plating (AEP), EPA ID #NJD002445500 conducts an electroplating business in buildings #19, #21 and #22 (See Attachment 2). AEP has occupied these buildings since April, 1971. Tennant Chemical Company once operated in building #21 during the sixties.

The company performs nickel and zinc plating which incorporates two automated methods: RACK (metal parts suspended from racks), building #21, and BARREL (metal parts are placed in a polypropylene barrel) building #22. Both procedures are dipped in the various plating solutions and rinses. AEP

stores their dry chemicals in building #19. The yard south of building #19 is used to store acid carboys.

Several processes are done to prepare the metal parts for plating. The parts are first cleaned with an alkaline solution which is followed by a water rinse. Next, the parts are placed in a mild acid bath for surface activation and once again rinsed with water. From this process, the parts are submerged either in the zinc or nickel solution. The zinc solution consists of zinc chloride, potassium chloride and boric acid. The nickel solution consists of nickel sulfate, nickel chloride and boric acid. After the plating is completed, the parts are rinsed with water a final time and air dried.

Spent plating solutions are discharged from two outlets into the outside drains surrounding the production building. The drains flow to a sewer connection located near the northeast corner of building #21. Prior to discharge, the pH of the effluent is adjusted (neutralized) in house before it is released to the Passaic Valley Sewerage Commission (PVSC) which regulates the discharge under permit #2040-1122. Automatic Electro-Plating's permit is effective until July 14, 1991.

In January of 1986, AEP was determined to be in violation of Sections 307 and 308 of the Clean Water Act, 33 U.S.C. Subsection 1317, and Subsection 1318. A Civil Action Suit (86-0920) was filed by the United States Environmental Protection Agency, Region II. Gerald Borriello, President of AEP, signed a Consent Decree on April 15, 1987 for settlement of the pending actions. A $100,000 penalty was paid for the violation by Automatic Electro-Plating.

A prospective acquisition of AEP stock by Gerald F. Mahoney and Sennody Volkov in 1989, initiated the Environmental Cleanup Responsibility Act (ECRA) pursuant to N.J.A.C. 7:26-B-1.6 (stock purchase and redemption agreement of controlling share of assets of an industrial establishment). Subsequently, a General Information Submission and Site Evaluation Submission were filed with the Bureau of Environmental Evaluation Cleanup and Responsibility Assessment (BEECRA) on November 30, 1989 and January 10, 1990 respectively. Both submissions were determined to be incomplete by the Industrial Site Evaluation Element (ISE).

The Earth Technology Corporation, consultant to Automatic Electro-Plating, submitted a ECRA Negative Declaration on April 6, 1990, but it was found to be deficient. A revised declaration submitted on April 18, 1990 was waved due to enforcement actions on the adjacent property. No sampling was originally proposed for the facility. However, Mr. Borriello stated during a site inspection on November 7, 1990, that the Department (presumably ECRA) is requiring him to investigate contamination on site through sampling.

LOT 6 AND 10, BLOCK 5005

The south-southeast portion of the Foundry Street Complex consists of Lots 6 and 10 (Block 5005). Ashland Chemical Company acquired the property from Lasp Realty, Inc. in June, 1968. The two parcels are referred to as the "West Plant" and lie adjacent to Arkansas Chemical. It should be noted that the Ashland facility is divided in half by the New Jersey Turnpike. The

portion of the facility located on the east side of the turnpike is referred to as the "East Plant", and is not considered part of the Foundry Street Complex.

ASHLAND CHEMICAL COMPANY

Ashland Chemical Company, Industrial Chemical and Solvents Division (IC&S), EPA ID #NJD060803905, 221 Foundry Street, has operated on Lots 6 and 10 (Block 5005) since 1968. Ohmlac Paint and Refinishing Company once manufactured roofing felts and coatings on Lot 6. The company ceased operations on the property around 1961. Subsequently, the property was leased by Jo-Mar Trucking through the mid sixties. No other information is known about the operations of Ohmlac and Jo-Mar Trucking.

The IC&S Division received bulk shipments of aliphatic and aromatic hydrocarbons, acids, alcohols, alkines, amines, esters, ethers, glycols, halogenated solvents, ketones, and nitro paraffins by rail car and tank truck. Ashland transfers the product into a series of above ground tank farms throughout their property. The chemicals are repackaged into smaller bulk lots, such as bags, drums, and other containers, for distribution to their customers. No chemicals are manufactured on site, however, a few special blends (solvent mixtures) are processed. Ashland also generates waste oils, spill cleanup material and hose residue on site.

The West Plant contains loading/unloading areas for rail cars and tank trucks, a drumming warehouse (Building #19), and a tank farm (referred to as the 200 Series), see Attachment 3. Ashland's 200 Series tank farm consisted of 17 vertical above ground storage tanks. Product stored inside the tanks included: 140 solvent, cyclohexane, diemethyl formaldehyde, laktane, light oils, mineral spirits, plasticizers, toluene, and xylene (See Storage and Transfer Vessels of Volatile Organic Substances Maintained in File). The tanks were surrounded by a containment wall made of fire brick. It should be noted that the containment wall was reported to be structurally unsound by DWR personnel. The tank farm also contained a storage tank for No. 4 fuel oil.

Widespread contamination has been documented throughout the IC&S facility. The contamination is a by-product of routine site operations (i.e. storage, loading/unloading operations). On March 7, 1979, a spill of No. 4 fuel oil occurred in the 200 Series tank farm, but was contained within the diking. Approximately 18,000 gallons of waste solvents and fuel oil were removed. Subsequently, a ground water recovery system, consisting of three trenches was installed around the 200 Series tank farm.

Inspections conducted by Department personnel on two occasions, March 13 and 28, 1979, noted that the recovery system had been infiltrated with oil and solvents. Apparently, the contaminants were not attributed to the spill, since the dike area contained a water bottom which prevented most of the spill from entering into the ground.

Spillage and/or leakage was also documented throughout Ashland's IC&S facility by representatives of the NJDEP. Areas noted included: All tank farms, loading/unloading manifolds, pipe connections, sumps, and the storm sewer system were noted to contain product. Corrective measures were

discussed with Ashland's officials who stated that it would not be economically feasible for the company to implement all of the remedies required by the Department.

On May 20, 1980, DWR personnel collected water samples from two recovery sumps on site. High levels of benzene, toluene, trichloroethylene, ethyl benzene, m-xylene, p-xylene, and o-xylene were detected in the sample collected from the west sump, located adjacent to building #19. Similar volatile organic compounds were present in the east sump sample.

Ashland proposed a ten year construction schedule to upgrade the facility's Discharge, Prevention, Containment, Countermeasure Plan (DPCC). However, this plan was found unacceptable. A modified plan to be implemented over a five year period was subsequently proposed, but excluded the construction of impervious diking and the replacement of old tanks. By April of 1984, a number of corrective measures outlined in the DPCC plan had been implemented. However, spillage still existed on site in many of the areas not yet addressed.

Ashland's DPCC plan went through numerous revisions but a final plan had not been approved by the Department. In November of 1984, Ashland suggested the construction of a new facility. Consequently, this approach was initiated and triggered ECRA.

Ashland's consultant, M.T. Gates, Inc. conducted a preliminary site assessment on December 1 and 21, 1987. During the December 21 site visit, soil samples and surface water samples were collected from the IC&S West Plant. These samples contained halogenated and aromatic volatile organic compounds, ketones and petroleum distillates.

M.T. Gates initial ECRA Sampling Plan for the IC&S facility was found to be inadequate by the BEERA. A revised Sampling Plan was approved on November 18, 1988. Ten monitoring wells were installed throughout the west plant and sampling occurred on March 7, 1989. In addition to the ground water samples, eight soil borings were taken at depths ranging from 1.5 - 3.0 feet. Both ground water and soil samples contained halogenated VOCs, aromatic VOCs, ketones, metals, and petroleum distillates. The greatest percentage of the contaminants detected were in the aromatic VOC fraction.

A Hydrogeologic Environmental Assessment Conceptual Remedial Plan was submitted by M.T. Gates, Inc. in 1990. The plan called for a ground water interceptor trench to be installed six feet below the existing grade, on the north, east, and south perimeter of the IC&S facility. The interceptor trench would be connected to a series of collection sumps that would accumulate contaminated ground water. The contaminated ground water would then be pumped through a treatment system and discharged into either the PVSC or surface waters. Recently, a Supplemental Sampling Plan has been submitted for the pump and treatment system proposed by M.T. Gates. Upon approval of the Sampling Plan, Ashland will obtain the necessary permits for the systems. The treatment system is expected to be operational by the Spring of 1991.

LOT 4, BLOCK 5005

Kem Realty Company merged with D.S.C. of Newark, NJ Raw Materials Inc., Newark Glassine Bag Company, Norpak Corporation, Diamond Ink Company, A.A.C. Realty Company and Core Realty Corporation forming Torco Investing Corporation on April 30, 1976. Torco Investing Corporation conveyed Lot 4 (Block 5005) to Norpak Corporation on November 30, 1976. Subsequently, Norpak merged with Norpak Specialties Corporation, Leeds Enterprises, Inc., and Abar International Corporation forming a new corporation named A.A.C. Transitional Investment Corporation. On November 30, 1981, A.A.C. sold Lot 4 to Norpak Corporation.

While under the ownership of Kem Realty Company, Norpak Corporation, Torco Investing Corporation, and A.A.C. Transition Investment Corporation, buildings and space on the property were leased to a number of tenants which include: ABC Demolition Company (Building #15), Avon Drum Company (north side of property), Berg Chemical (Buildings #5 and #5A), CWC Industries, Inc. (Buildings #17 and #18, and #36), Comstock Foods (Buildings #38), Conus Chemical (Buildings #4 and #7), Coronet Chemical Company (Building #9), County Lift Truck Service (Building #14), Essex Chemical (Building #17), Grignard Chemical (Building #7), Honig Chemical (Building #7 and #13), Hummel Chemical (Building Unknown), Morrel Truck Service (Building #9), and RFE Industries (Building #1).

NOTE: See Attachment 2 for Building Locations.

C.W.C. Industries, Inc.

C.W.C. Industries, Inc. leased space in buildings #17, #18 and #36. The company manufacturers hot stamping foils (plastic ribbons). The operation involves the application of solvent based surface coatings to a polyester substrate (film). Upon completion of this process, the coated films are dried in an oven. Raw materials used in the coating formulations include isopropanol, methyl ethyl ketone, methanol, v, m & p napthalene, plasticizers, and toluene. These materials were stored outside in a yard adjacent to building #17 and #18. C.W.C. claims that it does not generate any waste on site. Any left over materials are recycled because disposal is too expensive.

The company possesses a NJDEP Air Permit #063295 which they received in May of 1983. C.W.C.'s surface coating is categorized as a paper coating operation in accordance with Table 3B of N.J.A.C. 7:27-16.5. Volatile organic substances (VOS) cannot exceed 2.9 pounds per gallon of coating, applied per hour, in the paper coating category. Two surface coating samples taken on November 10, 1988 exceeded VOS standards. Analysis of the coatings revealed that the coatings contained 5.33 and 6.53 pounds of VOS per gallon. Subsequently, an Administrative Order and Notice of Civil Administrative Penalty Assessment (AO/NCAPA) in the amount of $500 was issued to C.W.C. Industries. The penalty was paid and the company began to come into compliance by ordering new air pollution control apparatus. No other Department actions are known to have occurred at the facility. C.W.C. has since purchased the former Hummel Lanolin facility.

Conus Chemical

Conus Chemical Company, Inc. (aka Berg Chemical), a New York Corporation, conducted a chemical repackaging/distribution business in buildings #4, #5 and #7 which are situated on the western portion of Lot 4. In September of 1984, Conus purchased the assets of Berg Chemical Company which included accounts, equipment and chemical inventory. Berg Chemical had operated a similar business in the Bronx, New York. The New York City Department of Environmental Protection performed a publicly funded cleanup at the Bronx site in July, 1984. Various chemicals were found improperly stored at the facility.

Norpak Corporation and Conus were both issued Directives by the Division of Hazardous Waste Management on April 16, 1987. The Directive indicated that hazardous substances were improperly stored in building #7. Some of these drums had discharged their contents. Both companies were directed to repack leaking containers, segregate materials on site by hazard class and compatibility, and engage a qualified contractor to submit a cleanup plan. No actions were taken to correct the noted problems.

Numerous incidents have occurred at Conus Chemical Company which have required responses by the Newark Office of Emergency Management and NJDEP, Bureau of Emergency Response. In June of 1987, a drum of benzyl chloride was emitting hydrogen chloride vapor through a pinhole leak. The drum had been previously owned by Berg Chemical. The BER used Spill Fund monies to hire a contractor who neutralized and contained the fuming drum. Efforts made by the Department to contact Conus personnel were unsuccessful.

Conus Chemical was evicted from Norpak's property on December 31, 1989. An inspection conducted by the DHWM, Bureau of Metro Enforcement noted discharges of hazardous substances throughout the inside and outside of the facility. Conus and Norpak were subsequently cited for violations under the Spill Act. On January 31, 1990 a fire occurred in an outside debris pile near building #8. The USEPA inspected the Conus facility and found approximately 1,000 drums and containers with acids, flammables, laboratory reagents, oxidizers, petroleum products and solvents improperly stored.

On February 9, 1990 the NJDEP officially referred the site to the USEPA for a CERCLA Removal Action. Consequently, Norpak Corporation granted EPA access to the site for a cleanup. Remedial activities commenced on February 19, 1990. The objective of the project was to remove any threat of fire and explosion, and eliminate the threat of direct contact with hazardous substances abandoned on site. The cleanup was completed by March 30, 1990. Further remedial activities at the site are now pending. Berg Chemical Co. Inc. and Conus Chemical are investigating site contamination through ECRA.

Coronet Chemical Company, Inc.

Coronet Chemical Company, Inc., EPA ID #NJD046954715, manufactured metallic sodium dispersions and pigment concentrations used in the teflon industry. In addition, the company was developing a sodium dispersion to destroy PCBs. The company occupied building #9 located to the east of Conus

Chemical. Coronet Chemical stored some of their raw materials in building #4 which they subleased from Conus.

Coronet was originally registered as a hazardous waste generator and TSD facility on their initial RCRA Part A application submitted in August, 1980. Coronet reclaimed napthalene and ether from spent teflon etching solution through settling and distillation processes. First, the solution was vacuumed into a distillation columnar and transferred into a holding tank as diethyleneglycoldimethylether. Once the settling process was completed, the ether went into a drying column containing activated aluminum and subsequently into a drum for resale. Still bottoms produced from the process, consisting of naphthalene (solid), were placed in five gallon pails and heated in a cooker. The clean naphthalene recovered from this process was used to make sodium dispersions. Waste generated by Coronet's operations included spill cleanup material (approximately one drum per year); solids from the distillation column (1/2 pound per year); and spent activated alumina. Non contact cooling water was discharged into the Passaic Valley Sewerage Authority.

This reclamation service was originally used by Atlantic Tubing, Paterson, NJ and Chem Plast, Wayne, NJ. However only Chem Plast was utilizing the services of Coronet in 1982. Due to the lack of business, TSD status was never developed.

RCRA inspections conducted by the Department in 1981 and 1982 noted numerous deficiencies at the facility. During one such inspection, a leaking drum of napthalene was observed and waste materials had exceeded the 90 day storage limit for hazardous waste. Moreover, waste generated from the recovery process was disposed into a domestic dumpster on site. Other deficiencies reported as a result of the RCRA inspections included: No waste analyses, no closure plan, no operation records, no personnel training, and no manifests.

Coronet vacated the premises around 1986. The company abandoned drums containing flammable, reactive and explosive materials on site. In March of 1987, a drum containing metallic sodium caught fire and exploded.

Grignard Chemical Company, Inc.

Grignard Chemical Company, Inc., EPA ID #NJD002201093, occupied building #7 located on the west side of Lot 4. The company conducted operations at this location between 1975 and 1984 which included the manufacturing of chemical preparations such as metal preservatives and cleaners.

On August 18, 1980 Grignard Chemical filed a Notice of Hazardous Waste Activity and subsequently a RCRA Part A application on November 19, 1980. The company's president, Emil G. Grignard, requested to delist the TSD facility to generator only status on September 21, 1981. The request was approved on March 3, 1983, after the Department had issued a Notice of Violation (NOV) in November 1982. The NOV cited Grignard Chemical for failure to submit an annual report required of TSD facilities. No other enforcement actions are known to have been taken against Grignard.

Waste generated by Grignard Chemical are generally unknown. However, in a letter to the USEPA, Grignard stated that they use chlorinated hydrocarbons. Also a Department memo dated February 1, 1982 indicated that Grignard received a shipment of transformer oil containing 135 ppm polychlorinated biphenyls (PCBs). According to the Industrial Waste Survey, Grignard generated one 30 gallon drum of solid waste every three weeks.

DISCHARGE/ABANDONMENT INFORMATION:

Foundry Street Complex
141-189 Foundry Street and 96-144 Roanoke Avenue
City of Newark, Essex County
Block 5005, Lots 4, 5, 6, 10, 21 & 22

Current Owners:
Block 5005, Lot 4 (96-126 Roanoke Avenue)
Norpak Corporation
76 Blanchard Street
Newark, NJ 07105

Block 5005, Lot 5 (171-183 Foundry Street)
City of Newark
920 Broad Street
Newark, NJ 07102
(201) 733-3844

Block 5005, Lots 6 & 10 (185-189 Foundry Street)
Ashland Oil & Refining Company
PO Box 1400
Lexington, Kentucky 40512

Block 5005, Lot 21 (128-144 Roanoke Avenue)
C.W.C. Realty Company, Inc.
185 Foundry Street, Building #18
Newark, NJ 07105

Block 5005, Lot 22 (157-169 Foundry Street)
Foundry Street Corporation
185 Foundry Street
Newark, NJ 07105

SUBSTANCES DISCHARGED/ABANDONED:

The following contaminants were detected in sediment samples, soil samples, and surface water samples collected throughout the Foundry Street Complex by the Bureau of Planning and Assessment on October 14, 1988.

VOCs: Acetone, Benzene, 2-Butanone, Carbon Disulfide, Chlorobenzene, Chloroform, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,2-Dichloroethene, Ethylbenzene, Methylene Chloride, 4-Methyl-2-Pentanone, Tetrachloroethene, Toluene, 1,1,1-Trichloroethene, Vinyl Chloride

BNAs: Anthracene, Benzoic Acid, Benzo(a)Anthracene, Benzo(b) Fluoranthene, Benzo(k)Fluoranthene, Benzo (g,h,i) Perylene, Benzo(a)Pyrene, bis (2-Ethylhexyl) Phthalate, Butylbenzylphthalate, 4-Chloroaniline, 1,2 Dichlorobenzene, 1,3 Dichlorobenzene, 1,4 Dichlorobenzene, Dibenzo(a,h)Anthracene, Di-n-Butylphthalate, Di-n-Octylphthalate, 2,4-Dichlorophenol, Fluoranthene, Fluorene, Indeno (1,2,3,-c,d) Pyrene, 2-Methylnaphalene, Naphalene, 2-Nitroaniline, Phenanthrene, Phenol, Pyrene, 1,2,4-Trichlorobenzene, 2,4,6-Trichlorophenol

PESTICIDES:

Aldrin, Dieldrin, 4,4'DDT, Arcolor 1248

METALS: Antimony, Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Silver, Vanadium, Zinc, Cyanide

DESCRIPTION OF SITE CONTAMINATION:

LOT 21 (BLOCK 5005)

Hummel Lanolin Corporation removed a 6,000 gallon underground storage tank, used to store fuel oil from the southwest corner of Lot 21 in 1985. The location of this former tank was a major environmental concern of Hummel Lanolin. As a result of this concern, Dames & Moore, consultants for Hummel Lanolin, installed six soil borings in the area of the former tank. Soil samples were collected at six inches above the saturation zone (approximately 5.0 - 5.5 feet in depth) and six inches below the base of the tank (approximately 10.0 - 10.5 feet in depth). It should be noted that ground water was encountered at a depth of five and one half feet.

All twelve samples were found to have petroleum hydrocarbons ranging in concentrations from 16 ppm to 1,720 ppm. Three samples analyzed for base neutral compounds revealed the presence of bis (2-ethylhexyl) phthalate, di-n-butyl phthalate, and napthalene. Other base neutral compounds were detected but could not be definitively identified. The two samples containing the highest concentrations of petroleum hydrocarbons were further analyzed to determine their constituents (fuel oil or wool grease). High concentrations of wool grease were detected in the sample taken from beneath the tank. The other sample, which was taken above the saturation zone revealed higher levels of fuel oil.

Six additional soil borings were made in the area of the former tank in March, 1987. The soil samples collected from these borings contained VOCs (i.e. benzene, toluene, 2-butanone, trichloroethane, 1,2-dichloropropane, xylene) semi volatiles (i.e. napthalene, fluoranthene, pyrene, chrysene, benzo(a)pyrene, phenanthrene), PHCs, and metals (i.e. cadmium, chromium, copper, lead, zinc).

Dames & Moore installed four monitoring wells (MW) in the vicinity of the former tank in July, 1987 to determine if ground water had been contaminated. During the installment of MW-1, a sludge like material with a septic odor, was encountered. On August 13, 1987, a soil boring was made approximately one foot from MW-1. The sludge material was not detected in the soil sample taken from the boring, however, a septic odor persisted. Contaminants detected in the sample included VOCs, B/Ns, pesticides and metals (arsenic, cadmium, lead and zinc).

A ground water sample was extracted from MW-2 on August 17, 1987. No significant levels (less than 1 ppm) of petroleum hydrocarbons and oil/grease were detected in the sample. It should be noted that no analysis for priority pollutants was performed on the sample. The presence of VOCs, B/Ns, and metals in soil samples would suggest possible leaching of these contaminants into the underlying ground water.

To further delineate the source of the sludge material, a sediment sample was collected from the base of a manhole located 60 feet from the facility on the southern portion of the property. The sediment sample contained VOCs, PHCs, and metals. These are the same types of contaminants present in the soil sample taken from the boring next to MW-1.

A composite soil sample was obtained from beneath a floor drain in the process building located near the area where the sludge material was discovered outside. The sample was taken at a depth of 20.5 - 26.3 inches and 26.1 - 32.5 inches. The sample contained VOCs, B/Ns, and metals below ECRA action level. The floor drains were determined not to be a source of the sludge through the concentrations detected in the soil sample.

In October, 1988, Dames & Moore collected a sediment sample (WC-1) and water sample (WC-2) from the drainage basin situated on the north side of the process building. The sediment sample contained methylene chloride (11,000 ppb), toluene (6,100 ppb), five B/Ns below method detection limits, and metals (i.e. cadmium, copper at 1,096 ppm, lead at 1,044 ppm, selenium, zinc at 3,746 ppm). The water sample contained low levels of cadmium and lead. However, both samples had elevated levels of total petroleum hydrocarbons.

LOT 22 (BLOCK 5005)

A preliminary ECRA investigation was performed at the Sun Chemical facility by Recon Systems, Inc. on October 14, 1986. Three (3) samples consisting of one soil sample from an unpaved area adjacent to a solid waste dumpster, one sediment sample from a drain located in the drive way south and adjacent to Sun, and one swipe sample of a oily substance on a boiler room floor were taken during the sampling episode.

The soil and sediment samples exceeded the Bureau of Industrial Site Evaluation cleanup levels for base neutral compounds and petroleum hydrocarbons. Base neutral compounds detected included napthalene, 2-methylnapthalene, di-n-butyl phthalate, bis (2-ethylhexyl) phthalate and unknown brominated compounds. Metals (i.e. antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) were also present in both samples. PCBs were detected in the soil and swipe sample.

In August, 1989, three monitoring wells were installed at Sun Chemical to examine ground water quality. Two of the three wells (MW-1, MW-3) were placed on the west and north side of the facility respectively. While MW-2 was placed to the south of the facility. Ground water was determined to flow in a southeast direction and was reported to be influenced by tidal action.

Ground water samples were collected from the monitoring wells on September 19 and November 10, 1989. The samples from all three wells exceeded ECRA action levels for total B/Ns and VOCs. However, levels detected in MW-2 were lower than those levels detected in the other two monitoring wells (MW-1, MW-3). In addition MW-3 also exceeded action levels for PHCs, PCBs, and metals (i.e. arsenic, cadmium, lead, mercury, zinc).

Recon Systems, Inc. collected four (4) sediment samples and one water sample from Sun's sewer system on July 17, 1990. Sediment sample #1 was collected from the drainage system (strip drain) located in the driveway separating Sun and Arkansas Chemical where a second drain from Arkansas property connects into the first drain. The sample contained elevated levels for volatile organic compounds (VOC), base neutral compounds (B/N), organic acids, cyanide, phenol and priority pollutant metals (i.e. lead, mercury).

Sediment sample #2 was collected from a catch basin located in the driveway separating Sun and Automatic Electro-Plating to the west. The catch basin is situated where an underground sewer line from Automatic Electro-Plating connects into the sewer system. This sample contained elevated levels of VOCs, unknown semi volatile compounds, cyanide (45 ppm) and priority pollutant metals (i.e. cadmium, chromium, copper, lead, nickel (4,270 ppm), zinc (4,140 ppm).

Sediment sample #3 was obtained from the underground sewer system where a strip drain located in the driveway on the north side of Automatic Electro-Plating connects with the underground sewer line. The sample contained PCBs (100 ppm), VOCs, B/N, organic acids, unknown semi volatiles, cyanide, phenol and priority pollutant metals (i.e. antimony, arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc). Overall, sediment sample #3 had the highest concentration of metals detected in all of the samples analyzed.

Monitoring wells MW-1 and MW-3 contained high levels of contamination. It was suspected that the contamination detected in the wells may be coming from an off site source. Recon Systems, Inc., consultants for Sun Chemical, installed five additional MWs in June and August, 1990. Two of the wells (MW-4, MW-5) were installed along the northern property line. MW-6 was installed along the western property line adjacent to Automatic Electro Plating. MW-7 was installed on the south side of the facility. Ground water was determined to flow onto Sun Chemical from the south. Sampling of the wells occurred on August 23, 1990. Ground water samples contained VOCs, B/N, and priority pollutant metals.

LOTS 4, 5, 21, 22 (BLOCK 5005)

Bureau of Planning and Assessment (BPA) personnel conducted a presampling site inspection (SI) at the Foundry Street Complex on October 7, 1988. Air monitoring and soil gas readings were limited to Lots 4, 5, 21 and 22. Soil gas readings ranged in concentrations from 0.6 ppm - 600 ppm (as benzene) and 10 ppm - 1,000 ppm (as methane) with the HNU and OVA respectively. Ambient air levels ranged from 1-10 ppm.

Information obtained from the SI indicated that further investigation was warranted. Eighteen soil samples, five sediment samples, four surface water samples, and two ground water samples were collected during the sampling episode on October 14, 1988 (See Attachment 2 for Sampling Locations). High concentrations of volatile organic compounds, base neutral compounds, PCBs, and metals were present in the soil, sediment, surface water and ground water samples. The most commonly detected contaminants included: Trichloroethane, benzene, chlorobenzene, toluene, xylene, tetrachlorobenzene, naphthalene, pyrene, di-n-butyl phthalate, bis (2-ethylhexyl) phthalate, butyl benzyl phthalate, aroclor 1248, arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc.

LOTS 6 & 10 (BLOCK 5005)

Ashland Chemicals ECRA consultant, T.M. Gates Inc. collected two surface water and three soil samples from Lot 10 in December of 1987. The samples were taken during a preliminary site assessment. Both surface water samples

contained 1,1,1-trichloroethane. The soil samples revealed several additional volatile organic compounds that included: 1,1-dichloroethane, 1,1-dichloroethene, xylene, 4-methyl-2-pentanone, and mineral spirits.

Based on the preliminary data, ten monitoring wells (MW) and eight soil borings (SB) were constructed on Lots 6 and 10. Three of the monitoring wells (MW-1, MW-2 and MW-3) were installed along the northern boundary of Lot 6, which is adjacent to Arkansas Chemical. These wells were intended to provide upgradient ground water quality data. Ground water samples from the three monitoring wells contained a variable pH, elevated concentrations of metals (i.e. arsenic, cadmium, chromium, copper, leads, nickel and zinc), and volatile organic compounds. MW-3 had the highest concentrations of metals.

The greatest occurrence of ground water contamination was detected in the central portion of Lots 6 and 10 in MW-5 and MW-6. Both wells were located in the vicinity of the 200 Series tank farm which has a history of spills and ground water contamination. Monitoring wells (i.e. MW-7, MW-8, MW-9 and MW-10) located hydraulically downgradient of the other wells contained low levels of volatile organic compounds. A general breakdown of the chemical groups detected in the ground water samples were halogenated VOCs (3%), aromatic VOCs (93%), ketones (4%), and petroleum distillates (trace).

ASHLAND/FOUNDRY
NEWARK, NEW JERSEY TANK LISTING - 8/9/79 1-1

TANK	M GALS. SIZE	CONTENTS
1	10.6	Empty - Tank No Good
2	10.6	Empty - Tank No Good
3A*	2.6	Isopropyl Alcohol
3B	2.4	Trichloroethylene
3C	5.3	2 Ethyl Hexanol
4*	10.5	#4 Fuel Oil
5*	10.5	Hi Sol 400
6A	3.9	Propylene Glycol
6B	3.7	Empty
6C*	3.9	Bayol 90
6D	3.8	Empty
7A*	4.2	Kerosene
7B	4.0	Empty
7C*	4.0	Solvent 140
7D	4.1	Di Isobutyl Ketone
8A	3.9	Ortho Dichlorobenzene
8B*	3.9	Solvent 460
8C*	3.9	Heptane
8D*	4.0	Slop Solvents
9A*	3.9	n Propyl Alcohol
9B	3.9	Empty
9C	3.9	2 Ethyl Hexane
9D	3.9	n Propyl Acetate
10A*	4.3	Butyl Cellosove/Methylene Chloride Blend
10B	3.9	Ortho Dichlorobenzene
10C	3.9	Methyl Cellosolve
10D	4.0	Empty
11*	5.0	Hi Sol 15
12*	5.0	Hi Sol 15
13	5.0	Methanol
14	7.8	Empty
15	7.9	Isopropyl Acetate
16*	7.8	Lacolene
17*	8.0	Lacolene
18	15.7	Ethanol, 190 Proof
19	15.8	Cellosolve Acetate
20	4.3	Cellosolve
21	6.5	Perchloroethylene
22*	4.3	Primary Amyl Acetate
23*	3.0	Blending Tank
24*	3.0	Blending Tank
25*	10.0	Blending Tank
26	22.9	Acetone
27	22.8	Methyl Isobutyl Ketone
28*	10.0	1309 Oil
29*	14.9	Kwic Dri Solvent

ASHLAND/FOUNDRY
NEWARK, NEW JERSEY TANK LISTING - 8/9/79 1-1

TANK	M GALS. SIZE	CONTENTS
30	2.4	Butyl Carbitol
31*	2.4	Blend of Mineral Spirits and Perchloroethylene
32	2.4	Empty
33	2.5	Empty
34	15.0	Ethylene Glycol Antifreeze
35*	15.0	Isopropanol
36	5.0	Isobutyl Acetate
37*	10.0	Methylene Chloride
38*	10.0	Hi Sol 10
39*	10.0	#4 Fuel Oil
40	10.0	Cyclohexanone
41	10.0	Ethyl Acetate
42*	20.0	Xylene
43*	10.0	Lacktane Solvent
44*	10.0	Mineral Seal Oil
45	10.0	Empty
46	10.0	n Butyl Alcohol
47	15.0	Ethanol, 190 Proof
48*	5.0	Hexane
49	7.7	Tetra Hydro Furan
50	7.3	Iso Butyl Alcohol
51	5.0	Di Acetone Alcohol
52	20.0	Butyl Cellosolve
53	20.0	Ethanol
54*	20.0	Isopropyl Alcohol
55*	19.9	Mineral Spirits
56*	15.0	V M & P Naphtha
57	5.0	Butyl Carbitol Acetate
58	20.0	Methyl Ethyl Ketone
59*	20.0	Heavy Aromatic/Naphtha
60	19.9	Methyl Alcohol
61*	20.0	Toluene
62	20.3	Butyl Acetate
63*	5.0	Blending Tank
91	20.0	Ethylene Glycol
92	19.5	Di Ehtylene Glycol
101	2.2	Empty
102	20.0	Di Octyl Phthalate
103	15.0	Di Isobutyl Phthalate
104	10.0	1,1,1 Trichloroethane
105	10.0	Butyl octyl Phthalate
106	10.0	Methyl Alcohol

ASHLAND/FOUNDRY
NEWARK, NEW JERSEY TANK LISTING - 8/9/79

TANK	M GALS. SIZE	CONTENTS
107	19.8	Esoflex 150 - Plasticizer
108*	15.0	410 Base Oil
109	10.0	Di Butyl Phthalate
110	10.0	Tri Crysol Phosphate
111	10.0	Butyl Cellosolve Acetate
112	19.9	Butyl Cellosolve/Cellosolve Blend
113*	19.9	Mineral Spirits 66
114*	19.9	Toluene
115	19.9	Ethyl Acetate
116	19.9	Dimethyl Formamide
117	15.0	Di Isononyl Phthalate
141	15.4	Ethylene Glycol - Deicer Fluid
142*	15.0	Diesel Fuel
143*	5.0	Toluene/Hi Sol 15 Blend
144*	10.0	Hi Sol 135
145	10.0	Methyl Isoamyl Ketone
146*	14.9	Mineral Spirits
147*	15.0	Mineral Spirits
148*	5.0	Slop Solvent
149*	5.0	Slop Solvent
150*	1.0	Boiler Fuel Oil (#2)
151	30.0	Empty
151A	5.0	Empty
152*	30.0	VM&P Naphtha
153	20.0	Propylene Glycol
201	30.0	Tetra Hydro Furan
202	30.0	Empty
203	30.0	Amdex 710 Plasticizer
204	30.0	Cyclohexane
205*	30.0	Magic Kote Solvent
206*	30.0	Solvent 140
207*	30.0	Xylene
208*	30.0	Mineral Spirits
209*	30.0	Mineral Spirits
210	30.0	Waste Water Separator
211*	30.0	Toluene/Mineral Spirits Blend
212	30.0	Amdex 522 Plasticizer
213	30.0	Empty Tank - No Good
214	30.0	Dimethyl Formanide
215*	10.0	#4 Fuel Oil
216*	30.0	Toluene
217*	30.0	VM&P Naphtha
218	30.0	Empty
219*	0.5	Boiler Oil (#2)
Alpha*	2.6	Blending Tank (Indoors)

Buried Tank	M Gals. Size	Contents
B*	10.0	Slop Tank for Main Truck Rack
C*	0.5	Maint. Shop-Boiler Fuel Oil
D*	1.0	Maint. Shop Diesel Fuels - Empty
E*	2.0	Truck Wash Rack Oil Separator

Total Storage Capacity =	1,712.3 M Gals.
Less Tanks Out of Service =	191.5 M Gals.
Less Non-Hazardous =	783.1 M Gals.
Total "Hazardous Material" Storage Capacitors	757.7 M Gals.

43RD DOCUMENT of Level 1 printed in FULL format.

Resource Conservation and Recovery Information System (RCRIS)

TAPE-DATE: September, 1993

EPA-ID: NJD060803905

EPA-REGION: 02

VISTA-NO: 28955

ASHLAND CHEMICAL COMPANY
221 FOUNDRY ST
NEWARK NJ 07105

LAND-TYPE: Facility is not located on Indian Land, additional information is not known

LATITUDE: 4043035

LONGITUDE: 07407053

LONG-LAT: Submitted by the Handler

MAILING-ADDRESS: 221 FOUNDRY STREET NEWARK, NJ 07105

ACTIVITY:
HANDLER IS A REGULATED TRANSPORTER;
HANDLER IS A VERIFIED, FULLY REGULATED, GENERATOR

VIOLATION:
GENERATOR OPERATIONS TRANSPORTER REQUIREMENTS TSD-GROUNDWATER REQUIREMENTS
TSD-CLOSURE/POST CLOSURE REQUIREMENTS TSD-FINANCIAL REQUIREMENTS
GENERATOR-LAND BAN REQUIREMENTS TSD-LAND BAN REQUIREMENTS CORRECTIVE ACTION
COMPLIANCE SCHEDULE TSD-OTHER REQUIREMENTS FORMER ENFORCEMENT AGREEMENT

CONTACT-TYPE1: Part A Data

CONTACT-NAME1: HENDRICKSON , ARLENE A / ANV ENG

CONTACT-ADDRESS1: 221 FOUNDRY ST NEWARK, NJ 07105 Phone: (614) 889-3695

CONTACT-TYPE2: Notification Data

CONTACT-NAME2: HENDRICKSON , ARLENE A / ANV ENG

CONTACT-ADDRESS2: 221 FOUNDRY ST NEWARK, NJ 07105 Phone: (614) 889-3695

OWN/OPER-STATUS1: CURRENT OWNER

OWN/OPER-TYPE1: PRIVATE

OWN/OPER-NAME1: ASHLAND CHEMICAL CO.

OWN/OPER-ADDRES1: 221 FOUNDRY STREET NEWARK, NJ 07105 Phone: (201) 344-3333

OWN/OPER-STATUS2: CURRENT OPERATOR

OWN/OPER-TYPE2: PRIVATE

OWN/OPER-NAME2: ASHLAND CHEMICAL CO.

OWN/OPER-ADDRES2: 221 FOUNDRY STREET OPERCITY, NJ 99999 Phone: (201) 344-3333

SIC-CODE: 5161 - WHL-CHEMICALS & ALLIED PRODUCTS (primary)

INFO-SOURCE: Notification Letter

DATE-RECEIVED: 08/18/80

USED-OIL-MRKTN: HANDLER IS ENGAGED IN THE MARKETING OF SPECIFICATION FUEL OIL ACTIVITIES - NO BURNER ACTIVITY

TRANSPORT-MODE: transports by road;

UNDERGROUND INJECTION CONTROL INDICATOR: No Activity

WASTE STREAM: 1

WASTE CODES FOR STREAM 1:
D000 - WASTE DEEMED HAZARD. BY CERTAIN COMPANIES
D001 - IGNITABLE WASTE
D002 - CORROSIVE WASTE
D003 - REACTIVE WASTE
F002 - SPENT HALOGENATED SOLVENTS TOXIC
F003 - SPENT NON-HALOGEN IGNITABLE SOLVENTS
F005 - SPENT NON-HALOGEN IGNITABLE & TOXIC SOLV
P022 - CARBON BISULFIDE
P029 - COPPER CYANIDES
U001 - ACETALDEHYDE (I)
U002 - ACETONE (I)
U004 - ACETOPHENONE
U012 - ANILINE (I,T) (BENZENAMINE) (I,T)
U019 - BENZENE (I,T)
U028 - BIS(2-ETHYLHEXYL) PHTHALATE
U031 - 1-BUTANOL (I)
U037 - CHLOROBENZENE
U044 - CHLOROFORM
U055 - CUMENE (I)
U056 - CYCLOHEXANE
U057 - CYCLOHEXANONE (I)
U069 - DIBUTYL PHTHALATE
U070 - O-DICHLOROBENZENE
U071 - M-DICHLOROBENZENE
U072 - P-DICHLOROBENZENE
U088 - DIETHYL PHTHALATE
U092 - DIMETHYLAMINE

U102 - DIMETHYL PHTHALATE
U103 - DIMETHYL SULFATE
U107 - DI-N-OCTYL PHTHALATE
U108 - 1,4-DIOXANE
U110 - DIPROPYLAMINE
U112 - ETHYL ACETATE (I)
U117 - ETHYL ETHER (I)
U122 - METHYLENE OXIDE
U123 - METHANOIC ACID (C,T)
U125 - 2-FURANCARBOXALDEHYDE (I), FURFURAL (I)
U134 - HYDROFLUORIC ACID (C,T)
U140 - ISOBUTYL ALCHOHOL (I,T)
U147 - MALEIC ANHYDRIDE
U154 - METHYL ALCHOHOL (I)
U159 - METHYL ETHYL KETONE (I,T)
U160 - METHYL ETHYL KETONE PEROXIDE (R,T)
U165 - NAPHTHALENE
U171 - 2-NITROPROPANE (I)
U189 - PHOSPHOROUS SULFIDE
U190 - PHTHALIC ANHYDRIDE
U194 - 1-PROPANAMINE
U210 - TETRACHLOROETHYLENE
U211 - METHANE, TETRACHLORO-
U213 - TETRAHYDROFURAN (I)
U219 - THIOUREA
U220 - TOLUENE
U223 - TOLUENE DIISOCYANATE (R,T)
U226 - METHYLCHLOROFORM
U228 - TRICHLOROETHENE
U239 - XYLENE (I)

PROCESS-CODE: - N/A

PROCESS COMMERCIAL INDICATOR: - Commercial Status Unknown

PROCESS-STATUS: CAPACITY STATUS UNKNOWN

EVALUATION CONTROL NUMBER: 861216001

EVALUATION AGENCY: State

EVALUATION DATE: 12/16/86

EVALUATION AREA: GER - GENERATOR-ALL [redacted]QUIREMENTS

EVALUATION TYPE: CEI - Compliance Evalu[redacted]tion Inspection

VIOLATION AREA: GER - GENERATOR--OTHER REQUIREMENTS

VIOLATION DATE: 12/16/86

VIOLATION CLASS: Class 1. Deviations from regulations, or provisions of compliance orders, consent agreements, consent decrees or permit conditions which could result in a failure to: (a) Assure that hazardous waste is destined for and delivered to authorized treatment, storage, or disposal

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facilities(TSDFs); or (b) Prevent releases of hazardous waste, both during the active and any applicable post-closure periods of the facility operations where appropriate; or (c) Assure early detections (d) Perform emergency clean-up operation or other (b) corrective action for releases.

VIOLATION RESOLVED DATE: 01/16/87

SCHEDULED RESPONSE DATE: 01/16/87

VIOLATION AREA: GER - GENERATOR--OTHER REQUIREMENTS

VIOLATION DATE: 12/16/86

VIOLATION CLASS: Class 1. Deviations from regulations, or provisions of compliance orders, consent agreements, consent decrees or permit conditions which could result in a failure to: (a) Assure that hazardous waste is destined for and delivered to authorized treatment, storage, or disposal facilities(TSDFs); or (b) Prevent releases of hazardous waste, both during the active and any applicable post-closure periods of the facility operations where appropriate; or (c) Assure early detections (d) Perform emergency clean-up operation or other (b) corrective action for releases.

VIOLATION RESOLVED DATE: 01/16/87

SCHEDULED RESPONSE DATE: 01/16/87

PERMIT:
Permit Sequence Number: 500
Permit Processing Number <PERMIT1
Permit Authority: EPA is solely authorized

PERMIT-INFO1:
Permit Processing Code: Permitting/closure/post-closure event 190
Responsible Agency: EPA
Actual Date of Event: 01/01/92
Event Status Code: AR

PERMIT-INFO2:
Unit Id: 1
Capacity: 1.000 Unknown Unit
Current Activity: Unknown

Unit Id: 1
Capacity: 1.000 Unknown Unit
Current Activity: Unknown

842540045

Decontamination/Decommissioning Plan

Ashland Chemical Company

221 Foundry Street

Newark, New Jersey 07105

TABLE OF CONTENTS

VI. Truck Rack For 100 Tank Farm

A. Description

There is another truck load rack on the eastern portion of the property. It is located near the 100 tank farm and is under Canopy 16A.

B. Cleaning

All lines associated with the truck load racks will be purged by an appropriate power spraying method. Wastewater generated will be collected in DOT drums, labeled as to origin and analyzed.

C. Disposal

The construction debris will be disposed of at a licensed landfill in accordance with ID-13 regulations. An ID-13 letter will be requested from the DEP.

VII. Drumming Areas

A. Description

The drumming areas in the plant are located in Building 12 as indicated on the plot plan and in the acid shed which is between building 13 and the main tank farm. Building 12 totals 1940 square feet. It is located in the center of the site near the turnpike.

B. Cleaning

Power spraying of the slab floor will be done.

C. Disposal

The construction debris will be disposed of at a licensed landfill in accordance with ID-13 regulations. An ID-13 letter will be requested from DEP.

I. Introduction

The site has been occupied by Ashland Chemical Company, a Division of Ashland Oil, Inc. for 20 years and by Chemical Solvents, Inc., Lacquer Specialties, and Ohmlac Paint and Refining Company for 28 or more years prior to Ashland's ownership. This plant has been a chemical and solvent distributor under Ashland and Chemical Solvent's ownership. Paints and lacquers were formulated in the areas owned by Lacquer Specialties and Ohmlac Paint and Refining. The New Jersey Turnpike serves as a divider between the eastern and western portions of the property. The tank farms, truck rack and drumming area on the eastern portion of the property are scheduled for demolition and removal in Phase I which is covered here. All remaining structures in the eastern portion of the property as well as the western portion of the property will be demolished and removed in Phase II.

Solvents which are stored in the tank farms currently are given in Table I tank list. The Material Safety Data Sheets for these solvents and some tanks which are out of service are given in Attachment 10 Sampling Plan Proposed Attachment C appended to the Site Safety and Contingency Plan. Figure 1 Plot Plan shows the lay out of the facility.

No Dioxin or PCB's have been used for operations or have been present within any buildings. All Asbestos materials, if present in tank insulation, will be removed in accordance with the procedures described in Appendix A.

Demolition debris will be disposed of as ID-13 material. An ID-13 letter will be requested by Ashland.

II. Tank Farm - Main

A. Description

Fifty-two (52) tanks are located in the main tank farm (see Figure 1). They consist of the following tanks.

Tank No.	Capacity (Gallons)
11	5,000
12	5,000
13	5,000
14	7,800
15	7,900
16	7,800
17	8,000
18	15,700
19	15,800
20	4,300
21	6,500
22	4,300
23	3,000
24	3,000

Tank No.	Capacity (Gallons)
25	3,000
26	22,900
27	22,800
28	10,000
29	14,900
30	2,400
31	2,400
32	2,400
33	2,500
34	15,000
35	15,000
36	5,000
37	10,000
38	10,000
39	10,000
40	10,000
41	10,000
42	10,000
43	10,000
44	10,000
45	10,000
46	10,000
47	15,000
48	5,000
49	7,700
50	7,300
51	5,000
52	20,000
53	20,000
54	20,000
55	19,900
56	15,000
57	5,000
58	20,000
59	20,000
60	19,900
61	20,000
62	20,300

All tanks will be emptied prior to cleaning and demolition. The tanks at one time contained the solvents listed in Table 1.

B. Cleaning

Cleaning by an appropriate power spraying method will be used. Wastewater generated by the power spraying will be collected in DOT approved drums, labeled as to the tank of origin and analyzed.

Piping connected to all tanks will be purged and the wastewater collected and sampled as previously described.

C. Disposal

The demolished tanks will be disposed of at a licensed landfill in accordance with ID-13 regulations. An ID-13 letter will be requested from the DEP.

III. Tank Farm - 100

A. Description

Fifteen (15) tanks are located in the 100 tank farm (see Figure 1). They consist of:

Tank No.	Capacity (Gallons)
102	20,000
103	15,000
104	10,000
105	10,000
106	10,000
107	19,800
108	15,000
109	10,000
110	10,000
111	10,000
112	19,900
113	19,900
114	19,900
115	19,900
116	19,900

All tanks will be emptied prior to cleaning and demolition. The tanks at one time contained the solvents listed in Table I.

B. Cleaning

Cleaning by an appropriate power spraying method will be used. Wastewater generated by the power spraying will be collected in DOT approved drums, labeled as to the tank of origin and analyzed.

Piping connected to all tanks will be purged and the wastewater collected and sampled as previously described.

C. Disposal

The demolished tanks will be disposed of at a licensed landfill in accordance with ID-13 regulations. An ID-13 letter will be requested from the DEP.

IV. Miscellaneous Tanks

A. Description

Seven (7) tanks are located in various locations around the plant (see Figure 1). They consist of:

Tank No.	Capacity (Gallons)
151	30,000
151A	5,000
152	30,000
153	20,000
5	10,500
91	20,000
92	19,000

All tanks will be emptied prior to cleaning and demolition. The tanks at one time contained the solvents listed in Table I.

B. Cleaning

Cleaning by an appropriate power spraying method will be used. Wastewater generated by the power spraying will be collected in DOT approved drums, labeled as to the tank of origin and analyzed.

Piping connected to all tanks will be purged and the wastewater collected and sampled as previously described.

C. Disposal

The demolished tanks will be disposed of at a licensed landfill in accordance with ID-13 regulations. An ID-13 letter will be requested from the DEP.

V. Truck Rack - 2 Bay Load Rack

A. Description

There is one two-bay truck load rack on the eastern portion of the property. It is located between the main and 100 tank farm and is indicated as "2 Bay Load Rack w/Canopy."

B. Cleaning

All lines associated with the truck load racks will be purged by an appropriate power spraying method. Wastewater generated will be collected in DOT drums, labeled as to origin and analyzed.

C. Disposal

The construction debris will be disposed of at a licensed landfill in accordance with ID-13 regulations. An ID-13 letter will be requested from the DEP.

TABLE I

Tank List as of 07/01/88

Newark, NJ

Tank #	Product Stored
11	Hi Sol 15
12	Hi Sol 15
13	DTL 16
14	n-Propyl Acetate
15	Isopropyl Acetate
16	Lacolene
17	Lacolene
20	n-Propanol
21	Perchloroethylene
22	Line Flush
23	Blends
24	Blends
25	Blends
27	Methyl Isobutyl Ketone
28	1309 Oil
30	Butyl Carbitol
32	PM Acetate
34	Antifreeze
35	Isopropyl Alcohol
36	Isobutyl Acetate
38	Hi Sol 10
39	Fuel Oil
40	Cyclohexanone
41	DTL 10
42	Xylene
43	Hexane
44	Mineral Seal Oil
45	Odorless Mineral Spirits
46	Butyl Acetate
47	Ethyl Alcohol (Synasol)
49	Methylene Chloride
50	Isobutyl Alcohol
51	Diacetone Alcohol
52	Glycol Ether EB
53	Methyl Ethyl Ketone
54	Kwik Dri
55	Mineral Spirits
56	VM&P Naphtha
57	VM&P Naphtha
58	Acetone
59	HV Aromatic Solvent
60	Methanol
61	Toluene
62	Butyl Alcohol
63	Blends

Tank #	Product Stored
91	Deicing Fluid
92	Diethylene Glycol
102	Dioctyl Phthalate
103	Diisodecyl Phthalate
104	1,1,1-Trichloroethane
107	Mineral Spirits 66
108	Hi Sol 400
109	Dibutyl Phthalate
112	Mineral Spirits 66
113	Mineral Spirits 66
114	Isopropyl Ether
115	Ethyl Acetate 99
142	Fuel Oil
215	Fuel Oil
216	VM&P Naphtha - SK
217	VM&P Naphtha - Reg
218	VM&P Naphtha - SK

Tank List as of 07/01/88

Newark, NJ

Tank #	Product Stored
11	Hi Sol 15
12	Hi Sol 15
13	DTL 16
14	n-Propyl Acetate
15	Isopropyl Acetate
16	Lacolene
17	Lacolene
20	n-Propanol
21	Perchloroethylene
22	Line Flush
23	Blends
24	Blends
25	Blends
27	Methyl Isobutyl Ketone
28	1309 Oil
30	Butyl Carbitol
32	PM Acetate
34	Antifreeze
35	Isopropyl Alcohol
36	Isobutyl Acetate
38	Hi Sol 10
39	Fuel Oil
40	Cyclohexanone
41	DTL 10
42	Xylene
43	Hexane
44	Mineral Seal Oil
45	Odorless Mineral Spirits
46	Butyl Acetate
47	Ethyl Alcohol (Synasol)
49	Methylene Chloride
50	Isobutyl Alcohol
51	Diacetone Alcohol
52	Glycol Ether EB
53	Methyl Ethyl Ketone
54	Kwik Dri
55	Mineral Spirits
56	VM&P Naphtha
57	VM&P Naphtha
58	Acetone
59	HV Aromatic Solvent
60	Methanol
61	Toluene
62	Butyl Alcohol
63	Blends

Tank #	Product Stored
91	Deicing Fluid
92	Diethylene Glycol
102	Dioctyl Phthalate
103	Diisodecyl Phthalate
104	1,1,1-Trichloroethane
107	Mineral Spirits 66
108	Hi Sol 400
109	Dibutyl Phthalate
112	Mineral Spirits 66
113	Mineral Spirits 66
114	Isopropyl Ether
115	Ethyl Acetate 99
142	Fuel Oil
215	Fuel Oil
216	VM&P Naphtha - SK
217	VM&P Naphtha - Reg
218	VM&P Naphtha - SK

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842540056

ANNUAL REPORT

by

Chief Engineer
S. A. LUBETKIN

to the

PASSAIC VALLEY SEWERAGE COMMISSIONERS

FOR THE YEAR

1971

Violation & Elimination-Armour Industrial (continued)

Mr. Lubetkin confirmed Mr. Perrapato's visit and directive to halt pollution at once, in a letter to the company dated April 12, 1971.

Subsequent inspections by the river inspector during the entire week disclosed no further discharge.

On May 28, 1971, Mr. Gall wrote to Mr. Lubetkin, informing him that the tests referred to, only occur at five year intervals and that in the future all water from such tests shall be put into the sanitary sewer.

Violation & Elimination-Artic Ice and Fuel Co., 158 Semel Avenue, Garfield, New Jersey
February 17, 1971 (J. Perrapato)

Oil in Fleischer's Brook was traced to a catch basin on Semel Avenue, Garfield, by Inspector J. Perrapato. Investigation revealed that the oil had come from the tanks of the above company. On February 22, Mr. Lubetkin wrote to the company directing them to clean the catch basin before the oil was washed into the stream and to do whatever else was necessary to keep the oil from reaching the catch basins again. A copy of the letter was sent to the City of Garfield, with an accompanying letter, stating that since the catch basin is owned by Garfield, they are responsible to see that it is cleaned. Farfield did clean the catch basin in early March, 1971.

On March 2, 1971, the Commissioners received a reply from the company explaining that the oil spill was caused by vandals, who had broken into their property and pulled plugs from oil trucks. They also explained that this incident was reported to the Garfield police, which are now patroling the plant.

Violation & Elimination-Ashland Chemical Company, 221 Foundry Street, Newark, New Jersey.
May 17 to June 11, 1971 (J. McLaughlin)

On May 17, 1971, Inspector J. McLaughlin sampled washings from this company, entering into the Roanoke Avenue Storm Sewer at Avenue P. Analysis of this sample indicated it was not only highly polluting, but contained flammable and explosive materials. The company was notified by Mr. Lubetkin on May 26, (copy to the City of Newark) to cease pollution at once, and they were warned against discharge to the sanitary sewer without proper pretreatment. Mr. M. Elias, Jr., District Manager, replied on May 28, informing that plans to permanently correct this situation were in the Engineering Department and would be sent to the Commissioners within two weeks. In the interim period, they would catch their liquid waste and have it disposed of by a reputable scavenger.

Violation & Elimination-Ashland Chemical Company, (continued)

Subsequent samples were bad, so Mr. Lubetkin telephoned Mr. Elias and was informed that the matter would be checked. In a letter dated June 11, Mr. Elias stated that the objectionable samples were caused by two outside tank wagon firms who pick up at the Ashland facilities. The outside trucking firms have been notified to cease this practice at once.

Mr. Elias met with Mr. Lubetkin and submitted plans to connect to the Newark sewer system through an oil separator system. Mr. Lubetkin informed them that the Commissioners had no objection to the system, but the City of Newark has final say on any connection of its system.

Inspection by the Commissioners' inspectors indicates that all truck washing operations have ceased at this location, pending the new sewer connection, thus the violation is eliminated.

As of the end of the year, the oil separator system has not been installed.

Three Violations & Eliminations-Atlantic Chemical Corporation, 10 Kingsland Road, Nutley, New Jersey .
April 13, 1971 (D . Miele,Jr.)

On April 13, about 12:50 P.M., this company received a delivery in a sealed Sea-Land container containing a cargo of 30-gallon steel drums containing water dispersable liquid pigment (yellow). When the seal was broken and the door opened, liquid material poured out and covered the ground, running into the storm sewer. Investigation revealed that approximately 10 drums or 300 gallons of this pigment reached the ground. Three workers dipped up some material and washed some with a fire hose into the storm sewer. In reply to a letter sent to this company concerning this matter, management claims that as soon as they learned of the situation, they halted the hose-down and the remaining material was absorbed with saw-dust and sand and removed. Personnel were directed by management, that in the event of future spills, dry clean-up methods must be used and they claim a substantial supply of absorbent material is now readily accessible to that area.

August 11-13 (D. Miele, Jr.)

The heavey rains of August 11 washed red dye into 3rd. River. Mr. D. Zinger was told by Inspector D. Miele, Jr. to clean yard area, so that future rains will not pollute the river. Mr. Miele reported this was completed on Friday, August 13, 1971.

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842540060

PASSAIC VALLEY SEWERAGE COMMISSIONERS
600 WILSON AVENUE
NEWARK, N.J. 07105
(201) 344-1800

June 15, 1976

009-315

Raymond Nesto
Manager Division of Sewers
20 Park Place
Newark, New Jersey 07102

Dear Mr. Nesto:

This letter is in reference to a pollution of the Passaic River which occurred on May 6, 1976 and which was caused by the Ashland Chemical Company, 221 Foundry Street, Newark, New Jersey. On that date a PVSC Inspector found personnel pumping material out of a catch basin on Avenue P. This catch basin flows into the Roanoke Avenue Storm Sewer, thence to the Passaic River. A sample which was analyzed by the PVSC Laboratory, was highly flammable and potentially explosive.

It appeared that the dangerous material came from the tank truck wash area where the tank trucks were brought for steam cleaning. Spills occurred when drivers disconnected hoses which had been connected from the steam cleaning equipment to the truck. This material then flowed into the catch basin thence Roanoke Avenue Storm Sewer.

Although Ashland Chemical is in the process of installing preventative measures you are hereby put on notice that this company has in the past allowed a flammable chemical to enter the City of Newark's Roanoke Avenue Storm Sewer.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS

Frank P. D'Ascensio
Superintendent 2

FPD:rv
Certified Mail
cc: S.A. Lubetkin
E. Moller

842540061

E

RCRA INSPECTION FORM

Report Prepared for:

Generator [X]

Transporter [ ]

HWM (TSD) facility [X]

Copy of report sent to the facility [ ]

Facility Information

Name: AshLand Chemical Co.

Address: 221 Foundry Street
Newark N.J. 07105

County: ESSex

EPA ID#: NJD060803905

Date of Inspection: 1/20/83

Participating Personnel

State or EPA Personnel: M. Ke NALBONE
Steve KRitsas

Facility Personnel: Ed Payson
chemist
WILLIAM ELSASSER — PLANT MNGR.
Mike McCANN — DISTRICT MNGR.

Report Prepared by Name: Mike Nalbone

Agency: NJDEP

Telephone #: (609) 292-9592

Approved for the Director by: _____

842540063

Facility Name Ashland Chemi. Date Of Inspection 1/20/83

EPA I.D. No. NJD060803905

NOT FOR RELEASE TO COMPANY. PROTECTED INFROMATION

Summary, Conclusions and Recommendations

The company did not comply with 265.16 265 subpart DD, 265.73, 265.112 of the TSD regulations. The company did not comply with these requirements because the company feels they did not operate as a TSD facility.

I recommend a NOV to the company to inform them to comply.

842540064

Summary of Findings

Facility Description and Operations

The company operates a one shift operation in manufacturing organic chemicals and solvents. The company services Drug, Plastic, Foundry, Paint and Furniture industry.

The company blends certain chemicals and repackages the material according to customer specifications. The company also accepts raw materials from other chemical manufacturers places their label on the material and ships it out.

The company was inspected in 1981 and it was found that the company was burning the line flushing waste in the boiler. After the company was fined for this procedure the burning was ceased and discontinued. Now I was informed that the line flushes which generate 10 to 15 gallons of either acetone, alcohols, ketones & thinner waste go into a tank truck or the blending tank. It would then be reused for the next batch or blended to lacquer thinner.

see page 2

Summary of Findings Page 2

Facility Description and Operations

I was informed that the status obtained by Ashland Chemical will be accurate once the company starts storeing hazardous waste. At this time The company generates waste and also has obtained five (5) transporter hazardous waste vehicle I.D. numbers. Untill additional pads for tank trucks, rail cars and storage tanks are hooked up for hazardous waste storage will the status be accurate as a TSDF. Although +1 companys generate waste on site disposal thrus the PVSA sewer lines thrus PVSA guidelines a review in additional intakes of product made. Although the company has a NJDEP hazardous waste permits S-82P2 (AA) (AC) (AE) (AB) (AD) no transportation has been done according to Mr Elsasle and Mr Pajerowe.

The wastes generated on site as previously mentioned are acid waste and line flush water. The acid dumping operation generates acid waste which is splashed in a 1000 gallon underground tank. The tank is filled to approximately 900 gallons. The acid

see page 3

Summary of Findings Page 3

lity Description and Operations

waste is neutralized by Ashland personnel. The acid waste truck is discharged immediately by PVSA personnel. A manifest report is sent to Vince Allemin of PVSA.

The second waste is a line flush waste. This is usually generated when Ashland personnel change from one product to another product. The lines are flushed with either acetic, alcohols, ketones or ? agent depending what lines need flushing. The line flush is generated in to 15 gallons of waste per flush. It then goes into a Ashland truck or a tank truck stored until picked for the next product batch as Lucinda Himmen.

According to Mr. Elsasser and Mr Parson this permit held by Ashland and NJDEP is separate, NJDEP Div. Waste Mngt transporter vehicle permit & PVSA discharge permit.

842540067

Is there reason to believe that the facility has hazardous waste on-site?

Yes

a. If yes, what leads you to believe it is hazardous waste? Check appropriate boxes:

☒ Company admits that its waste is hazardous during the inspection.

☒ Company admitted the waste is hazardous in its RCRA notification and/or Part A Permit Application.

☑ The waste material is listed in the regulations as a hazardous waste from a nonspecific source (§261.31)

☒ The waste material is listed in the regulations as a hazardous waste from a specific source (§261.32)

☑ The material or product is listed in the regulations as a discarded commercial chemical product (§261.33)

☐ Testing has shown characteristics of ignitability, corrosivity, reactivity or extraction procedure toxicity, or has revealed hazardous constituents (please attach analysis report)

☐ Company is unsure but there is reason to believe that waste materials are hazardous. (Explain)

Describe the activities that result in the generation of hazardous waste.

Acid dumping operation generates hazardous waste line flushes generate hazardous waste

note * Both above wastes are used or disposed of thru PVSA guidelines into PVSA sewer lines

Identify the hazardous waste located on site, and estimate the approximate quantities of each. (Identify Waste Codes)

Some WASTE Types on the application are potential WASTES as RAW MATERIALS but ARE NOT NORMAL daily wastes. These waste types include

D000	U002	U092	U140
D001	U004	U102	U147
D002	U012	U103	U154
D003	U019	U107	U159
F002	U020	U108	U160
F003	U031	U110	U165
F005	U037	U112	U171
P022	U044	U117	U189
P029	U054 thru 57	U122	U190
P053	U069	U123	U194
P090	U070 thru 73	U125	U210 thru 213
U001	U088	U134	U219 thru U223

U226
U228
U239

842540069

PASSAIC VALLEY SEWERAGE COMMISSIONERS
600 WILSON AVENUE
NEWARK, N.J. 07105
(201) 344-1800

June 15, 1976

009-315

Raymond Nesto
Manager Division of Sewers
20 Park Place
Newark, New Jersey 07102

Dear Mr. Nesto:

This letter is in reference to a pollution of the Passaic River which occurred on May 6, 1976 and which was caused by the Ashland Chemical Company, 221 Foundry Street, Newark, New Jersey. On that date a PVSC Inspector found personnel pumping material out of a catch basin on Avenue P. This catch basin flows into the Roanoke Avenue Storm Sewer, thence to the Passaic River. A sample which was analyzed by the PVSC Laboratory, was highly flammable and potentially explosive.

It appeared that the dangerous material came from the tank truck wash area where the tank trucks were brought for steam cleaning. Spills occurred when drivers disconnected hoses which had been connected from the steam cleaning equipment to the truck. This material then flowed into the catch basin thence Roanoke Avenue Storm Sewer.

Although Ashland Chemical is in the process of installing preventative measures you are hereby put on notice that this company has in the past allowed a flammable chemical to enter the City of Newark's Roanoke Avenue Storm Sewer.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS

Frank P. D'Ascensio
Superintendent 2

FPD:rv
Certified Mail
cc: S.A. Lubetkin
E. Moller
A. Goldberg

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842540071

GROUNDWATER TECHNOLOGY ®

Groundwater Technology, Inc.
310 Horizon Center Drive, Trenton, NJ 08691 USA
Tel: (609) 587-0300 Fax: (609) 587-7908

PROGRESS REPORT
FORMER ASHLAND CHEMICAL COMPANY IC&S FACILITY
221 FOUNDRY STREET
NEWARK, NEW JERSEY
ISRA CASE NO. 88695

10 August 1994

Prepared For:

Mr. Ted Horton
Ashland Chemical Company
P.O. Box 2219
Columbus, Ohio 43216

Prepared By:
Groundwater Technology, Inc.

Matthew Noblet
Project Manager
NJDEPE Subsurface Cert. #002105

842540072

The following summarizes the results of the April 1994 groundwater sample analytical results:

Parameter	Number of Wells Detected	Number of Wells Exceeding NJDEPE GWQS	Minimum Concentration		Maximum Concentration	
			µg/L	Well ID	µg/L	Well ID
Total HVOC	12	No Std	3.2	MW-27	260,500	MW-12
Chlorobenzene	1	1	3.2	MW-27	—	—
Chloroethane	6	No Std	4.1	MW-5B	13,000	MW-18
1,1-Dichloroethane	8	5	7.7	MW-5B	14,000	MW-12
1,2-Dichloroethane	2	2	5,200	MW-12	7,800	MW-30
1,2-Dichloroethene (total)	7	7	34	MW-12B	220,000	MW-12
1,2-Dichloropropane	2	2	8,100	MW-30	8,600	MW-12
Methylene chloride	4	4	350	MW-6	7,900	MW-12
Tetrachloroethene	3	3	43	MW-24	1,600	MW-30
1,1,1-Trichloroethane	3	3	56	MW-18	3,200	MW-30
Trichloroethylene	3	3	28	MW-24	1,800	MW-30
Trichlorofluoromethane	1	No Std	2,300	MW-30	—	—
Vinyl chloride	5	5	26	MW-24B	14,000	MW-16
Total Aromatic VOC	19	No Std	2	MW-27	86,500	MW-5
Benzene	17	17	1.3	MW-9	85,000	MW-5
Toluene	10	4	0.23	MW-27	26,000	MW-16
Ethylbenzene	8	2	1.6	MW-22	900	MW-12
Xylenes (total)	14	6	0.25	MW-27	7,500	MW-12
Total VOC	19	No Std	6	MW-27	329,900	MW-12

A comparison of the April 1994 groundwater quality data to the NJDEPE Ground Water Quality Standards (N.J.A.C. 7:9-6) indicates that groundwater quality in shallow and intermediate depth wells at the site exceeds the NJDEPE criteria for Class II-A groundwater. The primary areas of shallow HVOC impact are in the central portion of the site in areas of wells MW-12, MW-16, MW-18, and MW-30. The primary areas of AVOC impact are in the central portion of the site, in the areas of wells MW-12, MW-16, MW-18, and MW-30, and in the western portion of the site in the areas of wells MW-2, MW-5, and MW-6.

Concentrations of total HVOC in intermediate depth site wells MW-5B and MW-12B are significantly lower than the corresponding shallow wells (MW-5 and MW-12) at these locations. However, the total HVOC concentration in intermediate depth well MW-24B is slightly greater than the corresponding shallow well

GROUNDWATER TECHNOLOGY

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310 Horizon Center Drive, Trenton, NJ 0
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VOLUME I OF II
PROGRESS REPORT -
REMEDIAL INVESTIGATION REPORT -
CONCEPTUAL SOIL REMEDIATION WORKPLAN

FORMER ASHLAND CHEMICAL COMPANY IC&S FACILITY
221 FOUNDRY STREET, NEWARK, NEW JERSEY
ISRA CASE NO. 88695

15 November 1994

Prepared For:

Mr. Ted Horton
Ashland Chemical Company
P.O. Box 2219
Columbus, Ohio 43216

Prepared By:
GROUNDWATER TECHNOLOGY, INC.

Kimberly Lobb
Staff Environmental Scientist

GROUNDWATER TECHNOLOGY, INC.

Matthew Noblet
Project Manager

Reviewed/Approved By:
GROUNDWATER TECHNOLOGY, INC.

Cymantha Liakos
Program Manager

842540074

TABLE 5
GROUNDWATER SAMPLE RESULTS - MW-24C & MW-31 - 7 JULY 1994
FORMER ASHLAND CHEMICAL COMPANY IC&S SITE
221 FOUNDRY STREET
NEWARK, NEW JERSEY
ISRA CASE NO. 88695

WELL ID	MW-31	MW-24C	*NJDEP GW QUALITY STD*	FIELD BLANK
SCREENED INTERVAL (FEET)	0.25 - 5.25	28.0 - 38.0		
SAMPLE DATE	07-JUL-94	07-JUL-94		07-JUL-94
ANALYSIS DATE	15-JUL-94	19-JUL-94		15-JUL-94
VOLATILE ORGANICS (µg/L)				
Halogenated VOC Detected				
Chlorobenzene	ND	250	*4*	ND
1,2-Dichlorobenzene	0.39 J	3.1 J	*600*	ND
1,3-Dichlorobenzene	0.2 J	4.9 J	*600*	ND
1,4-Dichlorobenzene	0.26 J	11	*75*	ND
1,1-Dichloroethane	0.59 J	ND	*70*	ND
1,1-Dichloroethene	0.18 J	ND	*2*	ND
cis-1,2-Dichloroethene	30	2.2 J	*10*	ND
Tetrachloroethene	2.5	ND	*1*	ND
Trichloroethylene	2.0	ND	*1*	ND
Vinyl Chloride	4.2	ND	*5*	ND
TOTAL HALOGENATED VOC	40	271	*No Std*	ND
Aromatic VOC Detected				
Benzene	0.34 J	170	*1*	ND
Toluene	0.19 J	1.6 J	*1,000*	ND
Ethylbenzene	ND	3.4 J	*700*	ND
Xylenes (Total)	ND	2.5 J	*40*	ND
TOTAL AROMATIC VOC (µg/L)	0.53	178	No Std	ND
TOTAL VOLATILE ORGANICS (µg/L)	41	449	No Std	ND

Notes:
ND: Not detected.
J: Estimated value.
B: Analyte detected in associated method blank.

Shading indicates exceedance of NJDEP Groundwater Quality Standard, N.J.A.C. 7:9-6.

842540075

TABLE 70
AOC-32
SOIL QUALITY RESULTS – VOLATILE/BASE NEUTRAL ORGANICS
FORMER ASHLAND CHEMICAL COMPANY IC&S SITE
221 FOUNDRY STREET
NEWARK, NEW JERSEY
ISRA CASE NO. 88695

SAMPLE ID	32-3		32-6	NJDEP
SAMPLE DEPTH (FEET)	2.5-3.0		2.0-2.5	Cleanup
SAMPLE DATE	31-Aug-94		31-Aug-94	Criteria (1)
Volatiles (8240)				
Vinyl Chloride	4.8	J	NA	1
1,2-Dichloroethene (total)	46		NA	50
Tetrachloroethene	5.3	J	NA	1
Toluene	3.9	J	NA	500
Ethylbenzene	19		NA	100
Xylenes (total)	82		NA	10
Total BTEX	105		NA	
Total Targeted VOC	161		NA	
Total Non-Targeted VOC	172		NA	
Total VOC	333		NA	
Base Neutral Extractables (8270)				
Acenaphthene	0.43	J	ND	100
Anthracene	0.4	J	ND	500
Benzo(a)anthracene	0.57	J	ND	500
Benzo(a)pyrene	0.99	J	ND	100
Benzo(b)fluoranthene	2.2	E	ND	500
Benzo(g,h,i)perylene	0.71	J	ND	500
Bis(2-ethylhexyl)phthalate	2.2	B	[redacted]	100
Chrysene	1.1	J	ND	500
Dibenzo(a,h)anthracene	0.25	J	ND	500
Di-n-butyl Phthalate	0.26	BJ	ND	100
Di-n-octyl Phthalate	2.2		ND	100
Fluoranthene	3.1		ND	500
Fluorene	0.48	J	ND	100
Indeno(1,2,3-cd)pyrene	0.91	J	ND	500
2-Methylnaphthalene	1.5	J	ND	---
Naphthalene	0.57	J	ND	100
Phenanthrene	2.3		ND	---
Pyrene	2.3		ND	500
Total Targeted BN	22.5		400	
Total Non-Targeted BN	286.3		141	
Total BN	308.8		541	

MDL for all other Target Cpds = 3300

Notes:
ND: Not detected.
J: Estimated value.
B: Analyte detected in associated method blank.
E: The benzofluoranthene isomers were poorly resolved and both quantitated as the benzo(b)fluoranthene isomer.
(1): NJDEP Impact to Ground Water Soil Cleanup Criteria, 8-Feb-1994.
All concentrations are reported as mg/kg.

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842540076

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 5

SUMMARY OF DETECTABLE CONTAMINANT CONCENTRATIONS IN SOILS
JANUARY, 1989

VOLATILE ORGANICS	SB-1 (3-9')	SB-2 (6-12')	SB-3 (6-12')	SB-4 (0-6')	SB-5 (0-6')	SB-6 (0-6')	SB-7 (6-12')	SB-8 (6-12')	SB-9 (6-12')	SB-10 (6-12')	SB-11 (0-6')	SB-12 (0-6')	SB-13 (0-6')	SB-14 (0-6')	SB-15 (0-6')	SB-16 (0-6')	SB-17 (0-6')	SB-18 (0-6')	SB-19 (0-6')	SB-20 (0-6')	SB-21 (0-6')
HALOGENATED VOCs (U.S.EPA SW-846 Method 8240)																					
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16	80	100	93	9	81	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	27	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	7	1	2	ND	2	ND	4	3	0.167	4	ND	ND	6	6	ND	1	ND	1	ND	ND	ND
1,1,2,2-Tetrachloroethane	3	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	720	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROMATIC VOCs (U.S.EPA SW-846 Methods 8240 and 8250)																					
Benzene	2	ND	ND	ND	ND	ND	1	ND	ND	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	10	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	1	2	ND	ND	ND	1	1	ND	18	ND	11	ND	7	ND	ND	ND	ND	ND	8	ND
Toluene	ND	2	ND	ND	ND	ND	1	ND	ND	1	ND	12	36	ND	36	ND	22	3	ND	66	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	670	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene	2	2	4	ND	ND	ND	1	ND	ND	17	ND	87	11	22	300	ND	ND	ND	ND	39	ND
KETONES (U.S.EPA SW-846 Method 8240)																					
Acetone	3	1	ND	ND	ND	ND	2	3	0.203	2	ND	ND	11	9	8	ND	ND	ND	ND	ND	ND
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone (MIBK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PETROLEUM DISTILLATES																					
AROMATIC SOLVENTS (GC/FID Method based upon ASTM D3328)																					
Hi Sol 10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4728	ND	ND	ND	ND	ND	ND
Hi Sol 15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hi Sol 400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1464
ALIPHATIC SOLVENTS (GC/FID Method based upon ASTM D3328)																					
Laccolene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mineral Spirits	ND	ND	ND	ND	3300	ND	ND	ND	ND	ND	ND	[redacted]	[redacted]	ND	ND	ND	ND	ND	7110	ND	3122
140 Solvent	ND	ND	ND	8683	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OTHER (GC/FID Method based upon ASTM D3328)																					
Fuel Oil No. 2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	[redacted]	ND	ND
Total Pet. Distillates (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Petroleum Hydrocarbons (U.S.EPA Method 418.1)	NA	NA	NA	NA	NA	ND	NA	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL HALO. VOCs:	10	2	4	ND	2	ND	4	3	0.167	5	720	0.16	86	106	93	10	81	1	ND	27	ND
TOTAL AROM. VOCs:	29	5	6	ND	ND	ND	4	1	ND	46	670	110	47	29	336	ND	22	3	ND	113	ND
TOTAL KETONES:	3	1	ND	ND	ND	ND	2	3	0.203	3	ND	ND	11	9	8	ND	ND	ND	ND	ND	ND
TOTAL VOCs:	42	8	10	ND	2	ND	10	7	0.37	54	1390	110.16	144	144	437	10	103	4	ND	140	ND
TOTAL AROM. SOLVENTS:	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4728	ND	ND	ND	ND	ND	1464
TOTAL ALIPH. SOLVENTS:	ND	ND	ND	8683	3300	ND	ND	ND	ND	ND	ND	20454	10654	ND	ND	ND	ND	ND	7110	ND	3122
TOTAL OTHER:	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6700	ND	ND	ND	ND	ND	ND	ND	49100	ND	ND
TOTAL PETROLEUM DIST:	ND	ND	ND	8683	3300	ND	ND	ND	ND	ND	6700	20454	10654	ND	4728	ND	ND	ND	56210	ND	4586
TOTAL ORGANICS:	42	8	10	8683	3302	ND	10	7	0.37	54	8090	20564	10798	144	5165	10	103	4	56210	140	4586

NOTES: All results in milligrams per kilogram (mg/kg).
ND indicates compound not detected.
NA indicates compound not analyzed.

(1) "Total Petroleum Distillates" as mineral spirits, used when characteristic product patterns were not identifiable.

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 5 (continued)

SUMMARY OF DETECTABLE CONTAMINANT CONCENTRATIONS IN SOILS
JANUARY, 1989

VOLATILE ORGANICS	SB-44 (0-6")	SB-45 (0-6")	SB-46 (0-6")	SB-47 (3-9")	SB-48 (3-9")	SB-49 (3-9")	SB-50 (3-9")	SB-51 (0-6")	SB-52 (0-6")	SB-53 (6-12")	SB-54 (6-12")	MW-1 (3-9")	MW-2 (6-12")	MW-3 (6-12")	MW-4 (6-12")	MW-5 (6-12")	MW-6 (0-6")	MW-7 (6-12")	MW-8 (6-12")	MW-9 (6-12")	MW-10 (6-12")
HALOGENATED VOCs (U.S.EPA SW-846 Method 8240)																					
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2	ND	ND	2	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	7	ND	ND	ND	2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	ND	ND	ND	92	ND	3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	1	3	2	ND	150	2	4	2	5	9	12	3	3	2	5	1	1	1	0.166	3	2
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	630	ND	ND	ND	ND	ND	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	56	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
AROMATIC VOCs (U.S.EPA SW-846 Method 8240)																					
Benzene	ND	ND	ND	ND	12	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	640	1	ND	ND	ND	75	90	ND	ND	ND	34	ND	ND	ND	ND	ND	ND
Toluene	3	ND	ND	ND	720	ND	ND	ND	1	85	80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene	ND	ND	ND	21	13000	1	ND	ND	ND	380	65	ND	ND	ND	58	1	1	ND	ND	6	ND
KETONES (U.S.EPA SW-846 Method 8240)																					
Acetone	1	3	ND	ND	60	2	2	ND	ND	20	17	ND	5	1	ND	1	1	ND	0.203	4	2
2-Butanone (MEK)	ND	ND	ND	ND	38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ND	ND	ND	ND	108	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone (MIBK	ND	ND	ND	ND	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PETROLEUM DISTILLATES																					
AROMATIC SOLVENTS (GC/FID Method based upon ASTM D3328)																					
Hi Sol 10	ND	ND	ND	429	2646	ND	ND	ND	ND	769	2451	ND	ND	ND	ND	ND	ND	ND	230	ND	ND
Hi Sol 15	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hi Sol 400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ALIPHATIC SOLVENTS (GC/FID Method based upon ASTM D3328)																					
Laccolene	ND	ND	ND	ND	880	ND	ND	ND	ND	ND	1734	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mineral Spirits	ND	ND	ND	ND	5155	712	ND	ND	ND	2330	12355	ND	ND	ND	ND	ND	ND	ND	460	ND	ND
140 Solvent	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OTHER (GC/FID Method based upon ASTM D3328)																					
Fuel Oil No. 2	ND	ND	ND	ND	ND	3600	ND	ND	4888	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Pet. Distillates (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	720	3600	ND	ND	ND	ND	4400	ND
Petroleum Hydrocarbons (U.S.EPA Method 418.1)	640	73	870	2000	670	4800	79	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL HALO. VOCs:	1	3	2	ND	941	2	7	3	10	9	21	5	3	2	5	2	1	1	0.166	3	2
TOTAL AROM. VOCs:	3	ND	ND	21	14372	2	ND	ND	1	551	235	ND	ND	ND	92	1	1	ND	ND	9	ND
TOTAL KETONES:	1	3	ND	ND	386	2	2	ND	ND	20	17	ND	5	1	ND	1	1	ND	0.203	4	2
TOTAL VOCs:	5	6	2	21	15699	6	9	3	11	580	273	5	8	3	97	4	4	1	0.369	16	4
TOTAL AROM. SOLVENTS:	ND	ND	ND	429	2646	ND	ND	ND	ND	769	2451	ND	ND	ND	ND	ND	ND	ND	230	ND	ND
TOTAL ALIPH. SOLVENTS:	ND	ND	ND	ND	6035	712	ND	ND	ND	2330	14089	ND	ND	ND	ND	ND	ND	ND	460	ND	ND
TOTAL OTHER:	640	73	870	2000	670	8400	79	ND	4888	ND	ND	ND	ND	720	3600	ND	ND	ND	ND	4400	ND
TOTAL PETROLEUM DIST:	640	73	870	2429	9351	9112	79	ND	4888	3699	16540	ND	ND	720	3600	ND	ND	ND	690	4400	ND
TOTAL ORGANICS:	645	79	872	2450	25050	9118	88	3	4899	4279	16813	5	8	723	3697	4	4	1	690.369	4416	4

NOTES: All results in milligrams per kilogram (mg/kg).
ND indicates compound not detected.
NA indicates compound not analyzed.

(1) "Total Petroleum Distillates" as mineral spirits.

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 5 (continued)

SUMMARY OF DETECTABLE CONTAMINANT CONCENTRATIONS IN SOILS
JANUARY, 1989

VOLATILE ORGANICS	MW-11 (6-12')	MW-12 (3-9')	MW-13 (6-12')	MW-14 (6-12')	MW-15 (6-12')	MW-16 (6-12')	MW-17 (6-12')	MW-18 (6-12')	MW-19 (6-12')	MW-20 (3-9')	MW-21 (3-9')	MW-22 (3-9')	MW-23 (6-12')	MW-24 (6-12')	MW-25 (6-12')	MW-26 (6-12')	MW-27 (6-12')
HALOGENATED VOCs (U.S.EPA SW-846 Method 8240)																	
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.37	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	ND	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	12	ND
Methylene Chloride	3	3	8	7	2	4	ND	2	2	2	2	7	ND	2	ND	4	4
1,1,2,2-Tetrachloroethane	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	82	ND	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	15	ND	ND	ND	ND	ND	ND	ND	ND	26	ND	ND	ND	ND	8	ND
AROMATIC VOCs (U.S.EPA SW-846 Method 8240)																	
Benzene	ND	1	ND	ND	ND	3	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	16	ND	ND	ND	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	ND	18	ND	ND	ND	3	ND	ND	1	ND	ND	ND	ND	ND	ND	1	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylene	ND	42	ND	ND	ND	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
KETONES (U.S.EPA SW-846 Method 8240)																	
Acetone	1	2	3	3	3	3	ND	2	2	1	3	2	ND	ND	6	ND	ND
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone (MIBK	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PETROLEUM DISTILLATES																	
AROMATIC SOLVENTS (GC/FID Method based upon ASTM D3328)																	
Hi Sol 10	ND	ND	ND	ND	ND	ND	ND	471	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hi Sol 15	ND	1255	ND	ND	ND	195	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hi Sol 400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ALIPHATIC SOLVENTS (GC/FID Method based upon ASTM D3328)																	
Lacolene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Mineral Spirits	ND	5466	ND	ND	ND	ND	1482	ND	ND	ND	ND	ND	ND	ND	1018	ND	ND
140 Solvent	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4871	ND	ND	ND	ND
OTHER (GC/FID Method based upon ASTM D3328)																	
Fuel Oil No. 2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Pet. Distillates (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Petroleum Hydrocarbons (U.S.EPA Method 418.1)	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL HALO. VOCs:	3	135	8	7	2	4	ND	2	3	2.37	66	7	ND	2	ND	24	4
TOTAL AROM. VOCs:	ND	77	ND	ND	ND	35	ND	1	1	ND	ND	ND	ND	ND	ND	1	ND
TOTAL KETONES:	1	2	3	3	3	3	ND	2	2	1	3	2	ND	ND	6	ND	ND
TOTAL VOCs:	4	214	11	10	5	42	ND	5	6	3	69	9	ND	2	6	25	4
TOTAL AROM. SOLVENTS:	ND	1255	ND	ND	ND	195	ND	471	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL ALIPH. SOLVENTS:	ND	5466	ND	ND	ND	ND	1482	ND	ND	ND	ND	ND	4871	ND	1018	ND	ND
TOTAL OTHER:	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL PETROLEUM DIST:	ND	6721	ND	ND	ND	195	1482	471	ND	ND	ND	ND	4871	ND	1018	ND	ND
TOTAL ORGANICS:	4	6935	11	10	5	237	1482	476	6	3.37	69	9	4871	2	1024	25	4

NOTES: All results in milligrams per kilogram (mg/kg).
ND indicates compound not detected.

GROUNDWATER TECHNOLOGY

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REMEDIAL ACTION WORKPLAN ADDENDUM
FORMER ASHLAND CHEMICAL COMPANY IC&S FACILITY
221 FOUNDRY STREET
NEWARK, NEW JERSEY
ISRA CASE NO. 88695

15 December 1993

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TABLE 6
SOIL SAMPLE ANALYTICAL RESULTS SUMMARY
FORMER ASHLAND CHEMICAL COMPANY IC&S SITE
221 FOUNDRY STREET, NEWARK, NEW JERSEY
ISRA CASE NO. 88695

SAMPLE ID	SB-41	SB-42	SB-43	SB-44	SB-45	SB-46	SB-47	SB-48	SB-49	SB-50
DEPTH (FEET)	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.0-0.5	0.25-0.75	0.25-0.75	0.25-0.75	0.25-0.75
SAMPLE DATE	01/89	01/89	01/89	01/89	01/89	01/89	01/89	01/89	01/89	01/89
SITE MANAGEMENT AREA	CENTRAL	CENTRAL	CENTRAL	CENTRAL	CENTRAL	CENTRAL	CENTRAL	CENTRAL	S-EAST	S-EAST
PARAMETER										
VOLATILE ORGANIC COMPOUNDS (mg/Kg) E.P.A. Method 8240 Targeted VOCs Detected										
Acetone	15	ND	1	1	3	ND	ND	60	2	2
Benzene	ND	ND	ND	ND	ND	ND	ND	12	ND	ND
2-Butanone	ND	ND	ND	ND	ND	ND	ND	38	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	7	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cis/trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	92	ND	3
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	6	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	640	1	ND
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	108	ND	ND
Methylene chloride	ND	ND	2	1	3	2	ND	150	2	4
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	180	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	ND	ND	630	ND	ND
Toluene	19	ND	3	3	ND	ND	ND	720	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	56	ND	ND
Xylenes	18	ND	ND	ND	ND	ND	21	13000	1	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL BTEX	37	ND	3	3	ND	ND	21	14372	2	ND
TOTAL TARGETED VOCs	52	ND	6	5	6	2	21	15699	6	9
TOTAL PETROLEUM HYDROCARBONS (mg/Kg) E.P.A. Method 418.1	NA	NA	2900	640	73	870	2000	670	4800	79

NOTES:
ND = Not Detected, NA = Not Analyzed

GROUNDWATER TECHNOLOGY

TABLE 6
SOIL SAMPLE ANALYTICAL RESULTS SUMMARY
FORMER ASHLAND CHEMICAL COMPANY IC&S SITE
221 FOUNDRY STREET, NEWARK, NEW JERSEY
ISRA CASE NO. 88695

SAMPLE ID	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16
DEPTH (FEET)	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0	0.25-0.75	0.5-1.0	0.5-1.0	0.5-1.0	0.5-1.0
SAMPLE DATE	01/89	01/89	01/89	01/89	01/89	01/89	01/89	01/89	01/89	01/89
SITE MANAGEMENT AREA	WEST	WEST	WEST	WEST	CENTRAL	CENTRAL	CENTRAL	CENTRAL	CENTRAL	CENTRAL
PARAMETER										
VOLATILE ORGANIC COMPOUNDS (mg/Kg) E.P.A. Method 8240 Targeted VOCs Detected										
Acetone	ND	0.203	4	2	1	2	3	3	3	3
Benzene	ND	ND	ND	ND	ND	1	ND	ND	ND	3
2-Butanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	1	ND	ND	ND	ND
Cis/trans-1,2-Dichloroethene	ND	ND	ND	ND	ND	6	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND	16	ND	ND	ND	23
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	1	0.166	3	2	3	3	8	7	2	4
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	ND	ND	82	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND	18	ND	ND	ND	3
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	18	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	15	ND	ND	ND	ND
Xylenes	ND	ND	6	ND	ND	42	ND	ND	ND	[illegible]
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	[illegible]
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	11	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	3	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TOTAL BTEX	ND	ND	6	ND	ND	77	ND	ND	ND	35
TOTAL TARGETED VOCs	1	0.369	16	4	4	214	11	10	5	42
TOTAL PETROLEUM HYDROCARBONS (mg/Kg) E.P.A. Method 418.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND

NOTES:
ND = Not Detected, NA = Not Analyzed

GROUNDWATER TECHNOLOGY

TABLE 6
SOIL SAMPLE ANALYTICAL RESULTS SUMMARY
FORMER ASHLAND CHEMICAL COMPANY IC&S SITE
221 FOUNDRY STREET, NEWARK, NEW JERSEY
ISRA CASE NO. 88695

SAMPLE ID	MW-27	SB-55	SB-56	SB-57	MW-12B	MW-24B	MW-18
DEPTH (FEET)	0.5-1.0	6.5-7.0	4.75-5.25	5.5-6.0	4.5-5.0	4.5-5.0	5.5-6.0
SAMPLE DATE	01/89	09/02/92	09/02/92	09/02/92	08/31/92	08/31/92	09/11/92
SITE MANAGEMENT AREA	N-EAST	CENTRAL	CENTRAL	CENTRAL	CENTRAL	S-EAST	CENTRAL
PARAMETER							
VOLATILE ORGANIC COMPOUNDS (mg/Kg)							
E.P.A. Method 8240							
Targeted VOCs Detected							
Acetone	ND	13.0	4.6 J	ND	3.8 J	ND	2.5 J
Benzene	ND	3.2	3.6	130	ND	ND	19.0
2-Butanone	ND	3.4 JB	1.9 JB	ND	2.1 J	ND	1.2 J
1,1-Dichloroethane	ND	ND	0.28 J	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	150	ND	ND	ND
1,1-Dichloroethene	ND	ND	ND	22.0 J	ND	ND	ND
Cis/trans-1,2-Dichloroethene	ND	2.1	8.3	110	0.40 J	3.7	14.0
1,2-Dichloropropane	ND	ND	0.23 J	110	ND	ND	ND
Ethylbenzene	ND	4.9	3.7	37.0	6.7	ND	11.0
2-Hexanone	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	4	0.69 J	0.31 J	28.0 JB	ND	ND	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	27.0	2.7	840	6.0	0.73 J	1.1 J
Toluene	ND	19.0	7.7	400	8.5	ND	0.93
1,1,1-Trichloroethane	ND	2.9	ND	ND	ND	ND	2.6
Trichloroethene	ND	5.0	0.56 J	660	ND	ND	ND
Xylenes	ND	18.0	6.4	130	29.0	ND	41.0
Chloroethane	ND	ND	ND	ND	ND	ND	ND
Dichlorodifluoromethane	ND	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	ND
Styrene	ND	ND	ND	ND	ND	ND	ND
TOTAL BTEX	ND	45.1	21.4	697	43.2	ND	71.93
TOTAL TARGETED VOCs	4	99.2	40.3	2015	55.6	4.43	93.3
TOTAL PETROLEUM HYDROCARBONS (mg/Kg)							
E.P.A. Method 418.1	NA	NA	NA	NA	NA	NA	NA

NOTES:

ND = Not Detected, NA = Not Analyzed

J = Indicates the presence of a compound that meets the identification criteria, but the result is less than the sample PQL but greater than zero.

B = Compound also detected in corresponding method blank.

GROUNDWATER TECHNOLOGY

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TABLE 9
GROUNDWATER SAMPLE ANALYTIC
ASHLAND CHEMICAL,
221 FOUNDRY ST
NEWARK, NEW JE
ECRA CASE NO. 8

WELL ID	MW-1	MW-2	MW-3	MW-5	MW-5B	MW-6	MW-9	MW-12	MW
SCREENED INTERVAL (FEET)	2.5 - 6.5	1.0 - 6.0	2.5 - 7.5	2.0 - 7.0	20 - 30	3.0 - 7.0	1.5 - 6.5	2.0 - 7.0	20
SAMPLE DATE	10/02/92	10/01/92	10/01/92	10/02/92	10/02/92	10/01/92	10/02/92	10/01/92	10/0
ANALYSIS DATE	10/12&17/92	10/09/92	10/09/92	10/09/92	10/09/92	10/09/92	10/12/92	10/12/92	10/1
PARAMETER									
OLATILE ORGANIC COMPOUNDS (ug/L)									
Halogenated VOCs Detected									
Chloroethane	6.2	ND	ND	820	53.0	ND	ND	ND	
hloromethane	ND	ND	ND	ND	ND	ND	ND	25,000	4
1-Dichloroethane	ND	ND	ND	160 J	79.0	ND	1.4	15,000 J	
Cis-1,2-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	170,000	
ethylene Chloride	ND	ND	ND	ND	ND	ND	ND	ND	27
trachloroethene	ND	ND	ND	ND	ND	ND	ND	ND	
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	
nyl Chloride	ND	ND	ND	ND	ND	ND	ND	ND	
TOTAL HALOGENATED VOCs	6.2	ND	ND	980	132	ND	1.4	210,000	7
romatic VOCs Detected									
Benzene	ND	26,000	5200	61,000 B	4800 B	21,000	8.3	36,000	1
luene	ND	33.0 JB	6.7 J	210 JB	14.0 JB	32.0 JB	3.2 B	23,000	
hylbenzene	2.3 J	ND	ND	ND	ND	ND	3.7	ND	
Xylenes (Total)	180	ND	55.0	1600	71.0 J	130 J	140	ND	
TAL BTEX	182	26,033	5262	62,810	4885	21,162	155	59,000	
TAL VOCs	189	26,033	5262	63,790	5017	21,162	157	269,000	1

TES:

ND = Not Detected

J = Indicates the presence of a compound that meets the identification criteria, but the result is less than the sample PQL but greater than zero.

= Indicates the compound was detected in the associated blanks.

842540084

...TICAL RESULTS SUMMARY
...ICAL, INC. SITE
...STREET
...W JERSEY
NO. 88695

MW-12B	MW-16	MW-18	MW-21	MW-22	MW-24	MW-24B	MW-25	MW-26	MW-27	MW-28	MW-29
...-30	1.0 - 6.0	1.0 - 6.0	2.0 - 6.0	2.0 - 7.0	2.0 - 7.0	10 - 20	2.0 - 7.0	1.0 - 6.0	1.5 - 6.5	1.5 - 6.5	1.0 - 6.0
10/01/92	09/30/92	09/30/92	09/30/92	09/30/92	09/29/92	09/29/92	09/29/92	09/30/92	09/30/92	10/01/92	10/01/92
...12/92	10/07/92	10/07/92	10/08/92	10/08/92	10/07/92	10/06/92	10/06/92	10/8&9/92	10/08/92	10/09/92	10/08/92
ND	ND	6500	36.0	ND	ND	ND	940	ND	ND	ND	ND
44.0	ND	ND	ND	ND	ND	80.0	ND	ND	ND	ND	ND
ID	ND	16,000	ND	ND	ND	36.0 J	ND	ND	ND	ND	ND
6.8	88,000	4200	2.6	ND	650	2000	ND	7400	ND	ND	ND
27.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
D	ND	ND	ND	ND	130	430	ND	ND	ND	ND	ND
.D	ND	2900	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	54.0	1000	ND	ND	ND	ND	ND
D	19,000	490	8.1	ND	100	180	ND	3100	ND	ND	ND
79.8	107,000	30,090	46.7	ND	934	3686	940	10,500	ND	ND	ND
110	2300 J	1500	8.6	7.8	ND	9.0 J	52.0	340	0.10 J	1600	180
J	24,000	10,000	ND	1.5 B	6.4 J	15.0 JB	16.0 JB	1100	ND	ND	67.0 B
	1500 J	500	0.70 JB	0.70 JB	7.9 J	ND	6.8 JB	69.0 J	ND	ND	500
ND	6900 J	4400	0.80 J	1.7	14.0 J	ND	ND	230	0.80 J	28.0	5500
1	34,700	16,400	10.1	11.7	28.3	24.0	74.8	1739	0.90	1628	6247
1	141,700	46,490	56.8	11.7	962	3710	1015	12,239	0.90	1628	6247

GROUNDWATER TECHNOLOGY, INC.

842540085

VOLUME I

ECRA SAMPLING FINDINGS AND PROPOSED REMEDIAL ACTION

prepared for

ASHLAND CHEMICAL COMPANY
INDUSTRIAL CHEMICALS AND SOLVENTS DIVISION
221 FOUNDRY STREET
NEWARK, NEW JERSEY 07105
ID NO. NJD 060 803 905

ECRA CASE NO. 88695

prepared by

T. M. GATES, INC.
787 ROUND BOTTOM ROAD
MILFORD, OHIO 45150

May 19, 1989

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

Table 6A

SUMMARY OF DETECTABLE CONTAMINANT CONCENTRATIONS IN GROUNDWATER - EAST PLANT
March 7, 8 and 9, 1989

	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19	MW-20	MW-21	MW-22	MW-23	MW-24	MW-25	MW-26	MW-27	RANGE MINIMUM	RANGE MAXIMUM	AVERAGE	SUMP-1
HALOGENATED VOCs (ppm) (U.S. EPA Method 8240)																					
Chloroethane	ND	ND	ND	ND	ND	ND	ND	16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16	0.94	12
1,1-Dichloroethane	ND	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	18	1.06	0.93
1,2-Dichloroethane	ND	110	ND	ND	ND	ND	ND	14	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	110	7.29	ND
1,2-Dichloroethene (total)	ND	130	ND	ND	ND	90	ND	2.3	ND	ND	0.026	ND	0.0096	17	ND	18	ND	ND	130	15.14	ND
1,2-Dichloropropane	ND	75	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	75	4.41	ND
Methylene Chloride	ND	50	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	50	2.94	ND
Tetrachloroethene	ND	11	ND	ND	ND	60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	60	4.18	ND
1,1,1-Trichloroethane	ND	6	ND	ND	ND	ND	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	0.65	ND
Trichloroethene	ND	15	ND	ND	ND	9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15	1.41	ND
Vinyl Chloride	ND	ND	ND	ND	ND	115	ND	ND	ND	ND	ND	ND	ND	37	ND	22	ND	ND	115	10.24	ND
Total Halogenated VOCs	ND	415	ND	ND	ND	274	ND	37.4	ND	ND	0.026	ND	0.0096	54	ND	40	ND			48.26	12.93
AROMATIC VOCs (ppm) (U.S.EPA Method 8240, 8250)																					
Benzene	ND	51	0.014	ND	ND	3.1	ND	14	ND	ND	ND	ND	0.012	0.31	ND	ND	ND	ND	51.00	4.03	ND
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	0.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.79	0.05	0.52
Toluene	ND	28	0.06	ND	ND	30.5	ND	6.7	ND	ND	ND	ND	ND	2.1	ND	2.3	ND	ND	30.50	4.10	4.10
Xylene	ND	10	ND	ND	ND	9	ND	47	ND	ND	ND	5.40	ND	0.7	ND	ND	ND	ND	47.00	4.24	3.60
Total Aromatic VOCs	ND	89	0.074	ND	ND	42.6	ND	68.49	ND	ND	ND	5.40	0.012	3.11	ND	2.30	ND			12.42	8.22
KETONES (ppm) (U.S. EPA Method 8240)																					
Acetone	0.027	75	ND	ND	ND	ND	ND	ND	0.012	0.50	ND	0.048	ND	ND	ND	ND	ND	ND	75.00	4.45	2.50
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	2.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.50	0.15	ND
4-Methyl-2-Pentanone (MIBK)	ND	21	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	21.00	1.31	1.30
2-Hexanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1[illegible]
Total Ketones	0.027	96	ND	ND	ND	ND	ND	3.8	0.012	0.50	ND	0.048	ND	ND	ND	ND	ND			5.91	4.[illegible]
PETROLEUM DISTILLATES (ppm) (GC/FID Method based upon ASTM D3328)																					
AROMATIC SOLVENTS																					
Hi Sol 10	ND	ND	ND	ND	ND	0.0111	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0111	ND	ND
ALIPHATIC SOLVENTS																					
Hexane	ND	ND	0.10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	ND
OTHER																					
Iso-propyl Ether	ND	ND	ND	ND	ND	0.20	11	ND	ND	0.40	ND	ND	ND	ND	ND	1.40	ND	ND	11	0.77	1.60
Fuel Oil #2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.479
Total Petroleum Distillates	ND	ND	0.10	ND	ND	0.2111	11	ND	ND	0.40	ND	ND	ND	ND	ND	1.40	ND			0.77	2.079
TOTAL ORGANICS (ppm)	0.027	600	0.174	ND	ND	316.81	11	109.69	0.012	0.9	0.026	5.448	0.022	57.11	ND	43.7	ND			67.36	28.13
INDICATORS																					
pH (Std units)	6.68	9.50	*	5.60	6.93	5.57	7.25	6.08	6.98	7.25	7.51	*	*	*	*	*	*				6.90
SPEC. COND. (umh)	790	2810	*	824	785	2420	3640	790	925	1000	1049	*	*	*	*	*	*				810.00
TDS (mg/l)	490	2300	*	490	460	1900	1000	610	530	580	640	*	*	*	*	*	*				500.00

Note: ND = Not detected
[illegible] = INSUFFICIENT VOLUME TO BE ANALYZED ... ABORTED

ASHLAND CHEMICAL, INC. - NEWARK, NEW YERSEY
TABLE 2
SUMMARY OF SOIL ANALYTICAL DATA

PARAMETER	Tank B		Tank C			Tank D		Tank E	
	SB-47	SB-48	SB-31	SB-45	SB-46	SB-43	SB-44	SB-49	SB-50
VOLATILE ORGANIC COMPOUNDS (ppm)									
Dichlorodifluoromethane	ND	ND	1	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	ND	7	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene	ND	92	ND	ND	ND	ND	ND	ND	3
1,2-Dichloropropane	ND	6	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	150	ND	3	2	2	1	2	4
Tetrachloroethylene	ND	630	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	56	ND	ND	ND	ND	ND	ND	ND
AROMATICS									
Benzene	ND	12	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	640	ND	ND	ND	ND	ND	1	ND
Toluene	ND	720	ND	ND	ND	3	3	ND	ND
Xylenes	21	13000	ND	ND	ND	ND	ND	1	ND
KETONES									
Acetone	ND	60	5	3	ND	1	1	2	2
MEK	ND	38	ND	ND	ND	ND	ND	ND	ND
2-Hexanone	ND	108	ND	ND	ND	ND	ND	ND	ND
MIBK	ND	180	ND	ND	ND	ND	ND	ND	ND
AROMATIC SOLVENTS									
Hi-Sol 10	429	2646	ND	ND	ND	ND	ND	ND	ND
ALIPHATIC SOLVENTS									
Lacolene	ND	880	ND	ND	ND	ND	ND	ND	ND
Mineral spirits	ND	5155	771	ND	ND	ND	ND	712	ND
OTHER									
Fuel Oil No. 2	ND	ND	3323	ND	ND	ND	ND	3600	ND
Petroleum Hydrocarbons	2000	670	ND	73	870	2900	640	4800	79

HYDROGEOLOGIC ENVIRONMENTAL ASSESSMENT
CONCEPTUAL REMEDIAL PLAN

prepared for

ASHLAND CHEMICAL COMPANY
INDUSTRIAL CHEMICALS & SOLVENTS DIVISION
211 FOUNDRY STREET
NEWARK, NEW JERSEY 07105

by

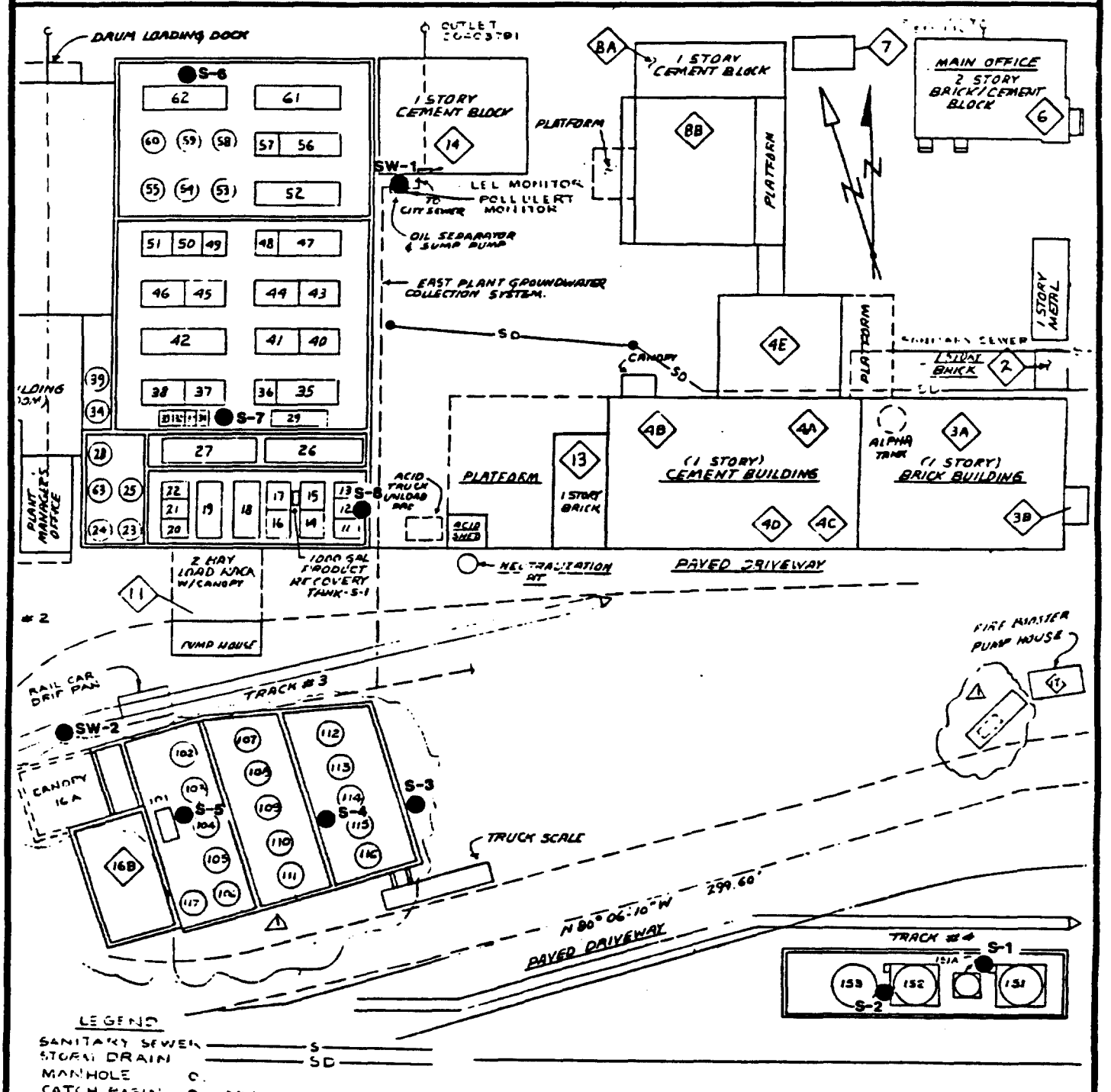
T. M. GATES, INC.
787 ROUND BOTTOM ROAD
MILFORD, OHIO 45150

(JUNE 1, 1988)

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

FIGURE 14

SAMPLE LOCATION PLAN



T.M. GATES, INC.

842540090

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 2

DESCRIPTION OF SAMPLING LOCATIONS

SAMPLE NO.	DESCRIPTION
	EAST PLANT
SW-1	- East plant groundwater collection sump
SW-2	- Standing water along rail siding
S-1	- Soil, southeast tank farm
S-2	- Soil, southeast tank farm
S-3	- Soil, east of 100 series tank farm
S-4	- Soil, 100 series tank farm
S-5	- Soil, 100 series tank farm
S-6	- Soil, 10 series tank farm
S-7	- Soil, 10 series tank farm
S-8	- Soil, 10 series tank farm

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 3

SUMMARY OF ANALYTICAL DATA
(concentration in ppm)

	EAST PLANT										
	SW-1 WATER	SW-2 WATER PHASE	SW-2 SINKER PHASE	S-1 SOIL	S-2 SOIL	S-3 SOIL	S-4 SOIL	S-5 SOIL	S-6 SOIL	S-7 SOIL	S-8 SOIL
Purgeables											
bromodichloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
bromoform	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
bromomethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
carbon tetrachloride	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chloroethane	10	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
2-chloroethylvinyl ether	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chloroform	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
dibromochloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,2-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,3-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,4-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
dichlorodifluoromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,1-dichloroethane	3.5	(3.3	55	(3.3	(3.3	(0.33	(0.005	190	(0.005	9.5	(3.3
1,2-dichloroethane	(0.08	(3.3	180	(3.3	(3.3	(0.33	(0.005	0.30	(0.005	(3.3	(3.3
1,1-dichloroethylene	(0.08	8.5	1,900	(3.3	(3.3	(0.33	(0.005	170	(0.005	(3.3	(3.3
trans-1,2-dichloroethene	0.79	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,2-dichloropropane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
cis-1,3-dichloropropene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
trans-1,3-dichloropropene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
methylene chloride	0.44	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,1,2,2-tetrachloroethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
tetrachloroethylene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	21	(3.3
1,1,1-trichloroethane	1.2	900	130,000	(3.3	(3.3	(0.33	(0.005	11,000	(0.005	(3.3	7.5
1,1,2-trichloroethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
trichloroethylene	(0.08	(3.3	16	(3.3	(3.3	(0.33	(0.005	1.8	(0.005	(3.3	(3.3
trichlorofluoromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
vinyl chloride	0.34	(3.3	(13	(3.3	(3.3	(0.33	0.12	3.0	(0.005	4.9	9.4
benzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	0.11	(0.08	(0.005	4.2	(3.3
ethylbenzene	(0.08	(3.3	(13	6,200	88	9.4	1.2	(0.08	(0.005	6.1	24
toluene	(0.08	(3.3	(13	3.3	16	(0.33	0.17	1.5	0.07	52	160
xylenes	(0.08	43	(13	430	11	9.7	0.46	0.12	(0.005	160	71
acetone	(4.0	(180	(850	(180	(180	(17	(0.3	(4.0	(0.3	(180	(180
4-methyl-2-pentanone (MIBK)	(4.0	(180	(850	(180	(180	3.4	(0.3	(4.0	(0.3	120	78
2-butanone (MEK)	(4.0	(180	(850	(180	(180	(17	(0.3	(4.0	(0.3	(180	(180
hexane	(0.40	(18	(85	(18	(18	(1.7	(0.03	(0.40	(0.03	(18	(18
heptane	(0.40	(18	(85	(18	(18	(1.7	(0.03	(0.40	(0.03	(18	(18
VM & P naphtha	(13	(330	(1,300	(330	(330	(33	(0.5	(8.0	(0.5	(330	(330
mineral spirits	(13	3,400	(1,300	(330	(330	1,100	2.1	8.3	(0.1	(330	(330
140 solvent	(26	(660	(2,600	(660	(660	(66	(1.0	(16	(1.0	(660	(660
TOTAL ORGANICS	16.27	4,351.5	132,151	6,630	115	1,122.6	4.16	11,375.02	0.07	377.7	349.9

TABLE 5
SOIL SAMPLE ANALYTICAL RESULTS SUMMARY
ASHLAND CHEMICAL, INC. SITE
221 FOUNDRY STREET
NEWARK, NEW JERSEY
ECRA CASE NO. 88695

SAMPLE ID	SB-65	SB-66	SB-67	METHOD BLANK	METHOD BLANK	MW-12B	MW-24B	METHOD BLANK	MW-18	METHOD BLANK
DEPTH (FEET)	6.5-7.0	4.75-5.25	5.5-6.0	—	—	4.5-5.0	4.5-5.0	—	5.5-6.0	—
SAMPLE DATE	08/03/92	08/03/92	08/03/92	—	—	08/31/92	08/31/92	—	09/11/92	—
ANALYSIS DATE	09/10/92	09/10/92	09/11/92	09/09/92	09/11/92	09/09/92	09/13/92	09/09,13/92	09/17/92	09/17/92
PARAMETER										
VOLATILE ORGANIC COMPOUNDS (ug/Kg)										
Targeted VOCs Detected										
Acetone	13.0	4.6 J	ND	ND	2.0 J	3.8 J	ND	ND	2.5 J	ND
Benzene	[redacted]	[redacted]	[redacted]	ND	ND	ND	ND	ND	19.0	ND
2-Butanone	2.4 JB	1.3 JB	ND	1.4 J	2.5 J	2.1 J	ND	ND	1.2 J	ND
1,1-Dichloroethene	ND	0.38 J	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene	ND	ND	150	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	[redacted]	ND	ND	ND	ND	ND	ND	ND
Cis/trans-1,3-Dichloropropene	2.1	5.3	[redacted]	ND	ND	0.46 J	3.7	ND	14.0	ND
1,2-Dichloropropane	ND	0.33 J	[redacted]	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	4.0	3.7	37.0	ND	ND	5.7	ND	ND	11.0	ND
2-Hexanone	ND	ND	ND	ND	1.5 J	ND	ND	ND	ND	ND
Methylene chloride	0.65 J	0.41 J	[redacted]	ND	0.31 J	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND	0.79 J	ND	ND	ND	ND	ND
Tetrachloroethene	[redacted]	[redacted]	[redacted]	ND	ND	[redacted]	0.73 J	ND	1.1 J	ND
Toluene	19.0	7.7	400	ND	ND	6.5	ND	ND	0.55	ND
1,1,1-Trichloroethane	2.8	ND	ND	ND	ND	ND	ND	ND	2.8	ND
Trichloroethene	[redacted]	0.56 J	[redacted]	ND	ND	ND	ND	ND	ND	ND
Xylenes	[redacted]	9.4	[redacted]	ND	ND	[redacted]	ND	ND	[redacted]	ND
TOTAL TARGETED VOCs	69.2	40.3	3815	1.4	7.7	85.6	4.49	ND	69.9	ND
Nontargeted VOCs Detected										
Benzene isomer	1.7	ND	ND	ND	ND	22.0 (3)	ND	ND	ND	ND
Benzene, ethyl-methyl isomer	7.3 (3)	0.9 (3)	38.0	ND	ND	131 (3)	ND	ND	13.1 (3)	ND
Benzene, trimethyl-methyl-ethyl isomer	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene, tetramethyl isomer	1.5	ND	ND	ND	ND	ND	ND	ND	1.8	ND
Benzene, methyl isomer	ND	1.0	ND	ND	ND	ND	ND	ND	0.7	ND
Benzene, trimethyl isomer	ND	ND	56.0	ND	ND	12.0	ND	ND	ND	ND
Cyclohexane	ND	4.0	139	ND	ND	ND	ND	ND	ND	ND
2-Pentene, methyl isomer	ND	ND	ND	ND	ND	ND	ND	ND	37.0	ND
Unknown alkane	18.4 (4)	14.2 (4)	ND	ND	2.36 (2)	33.2 (2)	ND	ND	7.5 (2)	ND
Unknown alkene	ND	ND	ND	ND	ND	27.6	ND	ND	ND	ND
Unknown benzene isomer	ND	ND	45.0	ND	ND	ND	ND	ND	ND	ND
Unknown	29.0	29.3 (2)	285 (3)	ND	9.56 (3)	ND	0.76	ND	23.2 (3)	ND
TOTAL NONTARGETED VOCs	68.4	69.3	695	ND	7.86	228	0.76	ND	68.4	ND

NOTES:

ND = Not Detected

J = Indicates the presence of a compound that meets the identification criteria, but the result is less than the sample PQL but greater than zero.

B = Compound also detected in corresponding method blank.

(XX) = Concentration reported reflects total of similarly identified compounds.

GROUNDWATER TECHNOLOGY, INC

842540093

VOLUME 1

ECRA SAMPLING FINDINGS AND PROPOSED REMEDIAL ACTION

PREPARED FOR

ASHLAND CHEMICAL COMPANY
INDUSTRIAL CHEMICALS & SOLVENTS DIVISION
221 FOUNDRY STREET
NEWARK, NEW JERSEY 07105
ID NO. NJD 060 803 905
ECRA CASE NO. 88695

MAY 19, 1989

Environmental and
Applied Earth Science
Consultants

T. M. GATES, INC.
787 ROUND BOTTOM ROAD
MILFORD, OHIO 45150
(513) 248-1025

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 6A (continued)

PRIORITY POLLUTANT METALS DETECTED IN GROUNDWATER - EAST PLANT
March 8, 1989

	MW-16	MW-18	MW-20	MW-21
ANTIMONY	ND	ND	ND	ND
ARSENIC	ND	ND	ND	ND
BERYLLIUM	ND	ND	ND	ND
CADMIUM	0.05	0.099	0.029	0.029
CHROMIUM	ND	ND	ND	ND
COPPER	ND	ND	0.091	ND
LEAD	0.11	0.36	0.47	0.2
MERCURY	ND	ND	ND	ND
NICKEL	ND	0.19	ND	ND
SELENIUM	ND	ND	ND	ND
SILVER	ND	ND	ND	ND
THALLIUM	ND	ND	ND	ND
ZINC	0.099	ND	0.23	ND

Note: All concentrations in milligrams/liter

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 6B (continued)

PRIORITY POLLUTANT METALS DETECTED IN GROUNDWATER - WEST PLANT
March 9, 1989

	MW-1	MW-2	MW-3
ANTIMONY	ND	ND	ND
ARSENIC	ND	ND	0.7
BERYLLIUM	ND	ND	ND
CADMIUM	ND	ND	0.025
CHROMIUM	ND	0.1	0.17
COPPER	ND	ND	0.052
LEAD	ND	ND	0.074
MERCURY	ND	ND	ND
NICKEL	0.28	0.38	0.84
SELENIUM	ND	ND	ND
SILVER	ND	ND	ND
THALLIUM	ND	ND	ND
ZINC	0.12	0.096	0.49

Note: All concentrations in miligrams/liter

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PASSAIC VALLEY SEWERAGE COMMISSIONERS
600 WILSON AVENUE
NEWARK, N.J. 07105
(201) 344-1800

May 20, 1977

Passaic Valley Sewerage Commissioners
600 Wilson Avenue
Newark, New Jersey

Re: Bi-Monthly Report
March and April 1977

Gentlemen:

The following is my report which covers the months of March and April 1977, and consists of three parts:

PART II

VIOLATIONS AND ELIMINATIONS

The following are reports on pollutional discharges into the Passaic River and its tributaries within the PVSC jurisdiction (the watershed from the Great Falls in Paterson to the mouth of the river at Newark Bay), together with reports on how they were eliminated during March and April of 1977, and the names of the River Inspectors assigned to investigate the pollution.

Violation and Elimination - Ashland Chemical Company, 221 Foundry Street, Newark, N. J.

May 6, 1976 - March 11, 1977 (J. Colello)

On May 6, 1976, a PVSC employee, while driving to work, saw personnel apparently from Ashland Chemical Co., 221 Foundry St., Newark, pumping a liquid out of a storm sewer catch basin on Avenue P and into drums. He notified the Sanitary Control Department and Inspector McLaughlin was directed to investigate. He arrived at Ashland Chemical later that morning and took a sample from the catch basin and later spoke to Mr. Donald Moore, Plant Manager.

Laboratory analysis showed that the material was highly flammable and potentially explosive. The catch basin, located on Avenue P, discharged into the Roanoke Avenue storm sewer, owned by the City of Newark, thence into the Passaic River.

It appeared that the dangerous material came from the tank truck wash area where the tank trucks were brought for steam cleaning. Spills occurred when drivers disconnected hoses which had been connected from the steam cleaning equipment to the truck.

Condensate and washed out solvent would spill on the ground and flow into the catch basin thence Roanoke Avenue storm sewer. When the situation was pointed out to Mr. Moore, he stated that Ashland was aware of the hazards and was about to construct a means of containing any future spills. The plans included a blacktop curbing 6" high around the tank truck wash rack, the relocating of the existing catch basin which feeds Roanoke Avenue Storm Sewer away from the area, and the construction of a large shallow sump under the wash rack that would collect future spills and direct them into an existing 2,000 gallon storage tank located in the ground. The contaminated material would then be pumped into drums and disposed of by Mr. Frank Fernicola of Ocean Gate, N.J.

Work started and by May 14 the 6" asphalt retaining embankment to contain the spillage had been constructed.

Violation & Elimination - Ashland Chemical Co. (con't.)

Inspector McLaughlin reported that the contractor, Brookside Contractors of Union, N.J., started grading the yard area in early July but was still awaiting bids on the balance of the construction.

On November 12, Mr. William Dorr, District Manager, wrote to Mr. D'Ascensio and stated that on October 25 Ashland received the contracts for the modifications to the loading rack from the Brandstatter Concrete Company. On November 2 the contracts were sent to company headquarters in Columbus, Ohio for final review and signatures. He stated finally that they expected that the completed contracts would be returned shortly. Mr. Moore informed Inspector Colello at the end of the month that the material for the wash rack was on order and the target date for completion was the end of December.

By the end of 1976, the spill tank had been installed; however, it was not until March 11, 1977 that the piping was completed, thus eliminating this violation.

Violation and Elimination - City of Clifton, Wabash Brook and Mersellis Avenue Storm Sewer

March 28 - April 14, 1977 (G. Fiore)

On March 28, 1977, while making routine checks in Clifton, Inspectors Fiore and Parr observed sewage flowing into the Passaic River from the Mersellis Avenue Storm Sewer, Clifton. Laboratory analysis of a sample later confirmed their suspicions that the discharge was polluting. Mr. Ed Bush, Foreman, Clifton Sewer Sewer Department, was contacted and advised of their observations and he was requested to investigate.

Inspector Fiore returned to the area the following day with Superintendent Cuccinello and Inspector Costello and they traced the flow upstream along Wabash Brook (which enters the Mersellis Avenue Storm Sewer at Mersellis Avenue), and observed sewage entering Wabash Brook at the corner of Wabash Avenue and Crooks Avenue. Mr. Bush investigated and found a break in the sanitary sewer line on Crooks Avenue, which allowed sewage to seep into the brook, causing the pollution.

The Clifton Sewer Department began excavating this area on April 13 and found the break in the 8" clay line. The leak was repaired with an Adams copper clamp on April 14 and the violation was eliminated.

PASSAIC VALLEY SEWERAGE COMMISSIONERS
600 WILSON AVENUE
NEWARK, N.J. 07105
(201) 344-1800

September 21, 1977

Passaic Valley Sewerage Commissioners
600 Wilson Avenue
Newark, New Jersey 07105

Re: Bi-Monthly Report
July and August 1977

Gentlemen:

The following is my report which covers the months of July and August 1977, and consists of three parts:

PART II

VIOLATIONS AND ELIMINATIONS

The following are reports on pollutional discharges into the Passaic River and its tributaries within the PVSC jurisdiction (the watershed from the Great Falls in Paterson to the mouth of the river at Newark Bay), together with reports on how they were eliminated during July and August of 1977, and the names of the River Inspectors assigned to investigate the pollution.

Violation and Elimination - Ashland Chemical Company, 300 Doremus Avenue, Newark, N.J.

June 30 - August 1, 1977 (M. Cordsaco)

On June 30, 1977, PVSC received a call that oil had entered the Passaic River from Ashland Chemical Company. Inspector Cordasco went to the plant and when he met with Mr. Richard Barr, Plant Manager, he was informed that a mechanical seal in a process pump failed and allowed a mixture containing 96% vegetable oil and 4% resin to leak on the ground, where about 5 gallons ran down the embankment and into the Passaic River. Workmen placed sand bags on the embankment to contain the material and used Speedi-Dri to absorb it.

The pump seal was repaired and by August 1, 1977, the oil soaked earth had been replaced.

Violation and Elimination - Beecham Products, Inc., 65 Industrial South, Clifton, N. J.

July 12-18, 1977 (B. Fiore)

On July 12, 1977, PVSC received a call from Beecham that detergent was entering the storm sewer which feeds MacDonald Brook. When Inspector Fiore went to the plant, he was informed by Mr. Robert Gannon, Engineering Manager, that on July 8, a 55 gallon drum of the detergent, Stephenoll, had spilled on the platform and ran over the ground. Although Gaess Environmental Service Corp. of Passaic cleaned up the spill so that none of the material reached the storm sewer at that time, heavy rain on July 12 caused the residue remaining in the ground to foam.

Plant personnel spread Dow Antifoam and blocked the storm drain in an attempt to control this polluting material and prevent it from reaching MacDonald Brook. Although their quick action may have minimized the pollution, it was evident that some did reach the storm sewer.

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2.2.2 General Facility Description - Existing - Details describing current operational activities at the Newark IC & S facility are contained in Ashland's Site Evaluation Submission (SES). In general, the Newark IC & S facility is a chemical and solvent distribution plant. Chemicals and solvents are shipped to the plant by railroad tank cars and tank trucks, and are stored in above ground bulk storage tanks in two different areas of the plant. The two bulk storage areas are designated as the east solvent tank farms and the west solvent tank farm (i.e., 200 series tanks)(see Figure 4). The tank list shown in Table 1 identifies the chemicals which are or have been stored in the tanks at the Newark IC & S facility.

Bulk chemicals are repackaged for sales in drum lot quantities to customers located throughout the area. The repackaging is done in the solvent and acid drumming areas (Figure 4). The drummed products are stored in the warehouse storage areas prior to sale. No chemical production is done on site. However, a few special blends (i.e., solvent mixtures) are prepared from raw materials stored on site.

Routine plant operations result in the accumulation of various amounts of mixed solvents. Solvents are recovered from such operations as drumming, blending, and the unloading and loading of railroad tank cars and tank trucks. The recovered solvents represent residual products that are in transfer lines, pumps and tanks, which are recovered when switching between the transfer of one product to another. The recoverable solvents are stored in 55 gallon drums, and are stored indoors in a dock high warehouse with an impervious concrete floor.

ASHLAND CHEMICAL COMPANY - NEWARK, NEW JERSEY

TABLE 1

STORAGE TANKS AND PRODUCT INVENTORY

TANK #	CAPACITY (Gallons)	PRODUCT STORED	CHEMICAL NAME (If Different)
11	5,000	Hi Sol 15	Petroleum Distillate
12	5,000	Hi Sol 15	Petroleum Distillate
13	5,000	DTL-16	Blend of Petroleum Distillate
14	7,800	Propyl Acetate	
15	7,900	Isopropyl Acetate	
16	7,800	Lacolene	Petroleum Distillate
17	8,000	Lacolene	Petroleum Distillate
18	15,700	Cellosolve Solvent	Ethylene Glycol Ethyl Ether
19	15,800	Cellosolve Acetate	Ethylene Glycol Ethyl Ether Acetate
20	4,300	Propanol	
21	6,500	Perchloroethylene	
22	4,300	Primary Amyl Acetate	
23	3,000	Blend Tank	
24	3,000	Blend Tank	
25	3,000	Blend Tank	
26	22,900	Methyl Ethyl Ketone	
27	22,800	Methyl Isobutyl Ketone	
28	10,000	1309 Oil	Petroleum Distillate
29	14,900	Kwik Dri Solvent	Petroleum Distillate
30	2,400	Butyl Carbitol	Diethylene Glycol Butyl Ether
31	2,400	Empty	
32	2,400	P. M. Acetate	Propylene Glycol Methyl Ether Acetate
33	2,500	Empty	
34	15,000	Empty	
35	15,000	99% Isopropanol	
36	5,000	Isobutyl Acetate	
37	10,000	Empty	
38	10,000	Hi Sol 10	Petroleum Distillate
39	10,000	Fuel Oil	Petroleum Distillate
40	10,000	Cyclohexanone	
41	10,000	DTL 10	Petroleum Distillate
42	20,000	Xylene	
43	10,000	Hexane	
44	10,000	Mineral Seal Oil	Petroleum Distillate
45	10,000	Multisolve 100	Petroleum Distillate
46	10,000	Butyl Acetate	
47	15,000	Synasol Solvent	Ethanol
48	5,000	Empty	
49	7,700	Methylene Chloride	

ASHLAND CHEMICAL COMPANY - NEWARK, NEW JERSEY

TABLE 1 (Continued)

STORAGE TANKS AND PRODUCT INVENTORY

TANK #	CAPACITY (Gallons)	PRODUCT STORED	CHEMICAL NAME (If Different)
50	7,300	Isobutanol	
51	5,000	Di Acetone Alcohol	
52	20,000	Butyl Cellosolve	Ethylene Glycol Butyl Ether
53	20,000	Anhydrous Synasol	Ethanol
54	20,000	Toluene RCC/Multisolve	
55	19,900	Mineral Spirits	Petroleum Distillate
56	15,000	VM & P Naphtha	Petroleum Distillate
57	5,000	VM & P Naphtha	Petroleum Distillate
58	20,000	Acetone	
59	20,000	Heavy Aromatic Naphtha	Petroleum Distillate
60	19,900	Methanol	
61	20,000	Toluene	
62	20,300	Butanol	
63	5,000	Inmont VM & P	
102	20,000	Di Octyl Phthalate	
103	15,000	Di Isobutyl Phthalate	
104	10,000	Empty	
105	10,000	Empty	
106	10,000	Empty	
107	19,800	Empty	
108	15,000	Hi Sol 400	Petroleum Distillate
109	10,000	Empty	
110	10,000	Empty	
111	10,000	Empty	
112	19,900	Empty	
113	19,900	Empty	
114	19,900	Isopropyl Ether	
115	19,900	Empty	
116	19,900	Empty	
117	15,000	RCC	
142	15,000	Diesel Fuel	Petroleum Distillate
151	30,000	Ethyl Benzene	
152	30,000	Empty	
153	20,000	Hi Sol 4-3N	Petroleum Distillate
201	30,000	Empty	
202	30,000	Lacolene	
203	30,000	Empty	
204	30,000	Di Methyl Formamide	
205	30,000	Empty	
206	30,000	140 Solvent	Petroleum Distillate

ASHLAND CHEMICAL COMPANY - NEWARK, NEW JERSEY

TABLE 1 (Continued)

STORAGE TANKS AND PRODUCT INVENTORY

TANK #	CAPACITY (Gallons)	PRODUCT STORED	CHEMICAL NAME (If Different)
207	30,000	Empty	
208	30,000	Mineral Spirits, Odorless	Petroleum Distillate
209	30,000	Mineral Spirits, Rule 66	Petroleum Distillate
210	20,000	Empty	
211	20,000	Empty	
212	20,000	Empty	
213	20,000	Empty	
214	30,000	Di Methyl Formamide/Air	
215	10,000	Fuel Oil #2	Petroleum Distillate
216	30,000	Empty	
217	30,000	VM & P Naphtha/3	Petroleum Distillate
218	30,000	VM & P Naphtha 50/50	Petroleum Distillate
Alpha	2,600	Blend Tank	
S-1	1,000	Recovered Solvents (Above ground tank)	Petroleum Distillate

Recovered solvents are either sold for beneficial use or shipped off-site to a solvent reclaimer or a waste disposal firm.

Waste acids or bases from the inorganic drumming operations were once collected in a neutralization pit (Figure 4), and the contents of the neutralization pit were routinely pumped to the sanitary sewer after the pH has been checked and adjusted. However, the neutralization pit was taken out of service in August 1987 and is scheduled for removal in 1988.

2.2.3 General Facility Description - Historic - Details describing the historic operational activities that occurred on the property currently owned by Ashland are contained in the Site Evaluation Submission (SES) (see Attachments 1, 5A and 5B in SES)*. In general, the historic operations were very similar to Ashland's current operations.

Excluding the approximately 0.8 acre westernmost portion of the western parcel of the Ashland property*, the land was originally owned by Lasp Realty, Inc., a closely held real estate holding company that owned the land from 1940 through 1968. Lasp Realty, Inc. leased the property to two (2) companies, Chemical Solvents, Inc. and Lacquer Specialties. In 1968, Ashland purchased the property from Lasp Realty, Inc.

Chemical Solvents, Inc., a privately held company, occupied and operated most of the property initially owned by Lasp Realty, Inc. from 1940 to 1968. The commercial activities of Chemical Solvents, Inc. were

essentially the same as Ashland's current operations. In 1967, Ashland purchased Chemical Solvents, Inc. and took over operation of the facility in 1968.

Lacquer Specialties also operated on land leased from Lasp Realty, Inc. The occupied a rectangular portion of land which measured approximately 220 feet north-south, 290 feet east-west, and which had it's northeastern corner at the intersection of Avenue "P" and Foundry Street*. Operations of Lacquer Specialties included the blending of varnishes, lacquers and thinners. Lacquer Specialties terminated operational and business activities in approximately 1970, and Ashland, the land owner, took occupancy of the property.

The Ohmlac Paint Company owned a 0.8 acre piece of land located in the westernmost portion of the western parcel of Ashland's existing property*. The specific operations of the Ohmlac Paint Company are not known. However, it is assumed that they were a processor and blender of paints. It is understood that the Ohmlac Paint Company ended operations in 1960-1961, and Ashland subsequently acquired the property in 1968. The property boundary for the Ashland Chemical Company Newark, New Jersey IC & S plant is shown on Figure 4*.

2.2.4 Spill History - A 3,000 gallon spill of #4 fuel oil occurred on March 6, 1979 in the 200 series tank farm. The cause of the spill was water contamination of the fuel oil as received from the supplier which caused freezing and rupture of the supply pipeline between the fuel oil storage tank and steam boiler. The spill was contained within the tank farm dike.

The spill was reported immediately to the New Jersey Department of Environmental Protection, and the firm of Olsen and Hassold, Inc., of Patterson, New Jersey, was retained to recover the spill and cleanup the area. The recovered material was disposed of off-site.

At the request of the NJDEP, an underdrain system was installed around the 200 series tank farm dike (Figure 4). The purpose of the underdrain system was to cleanup any groundwater that may have been contaminated by the spill. The underdrain system drains to a collection sump. Oils which separate from water in the collection sump are removed, and the oil free water is discharged to the Passaic Valley Sewer System. Additionally, as a precautionary measure, a similar system was installed for the 100 and 11-62 series tank farms (Figure 4).

Two possible or suspected discharges (i.e., February 3, 1981 and April 22, 1984) were reported to the NJDEP and were cleaned-up to the satisfaction of the NJDEP at the time of the incidents. Additional information pertaining to these suspect discharges is contained in the response to Question No. 10 of the Site Evaluation Submission (SES).

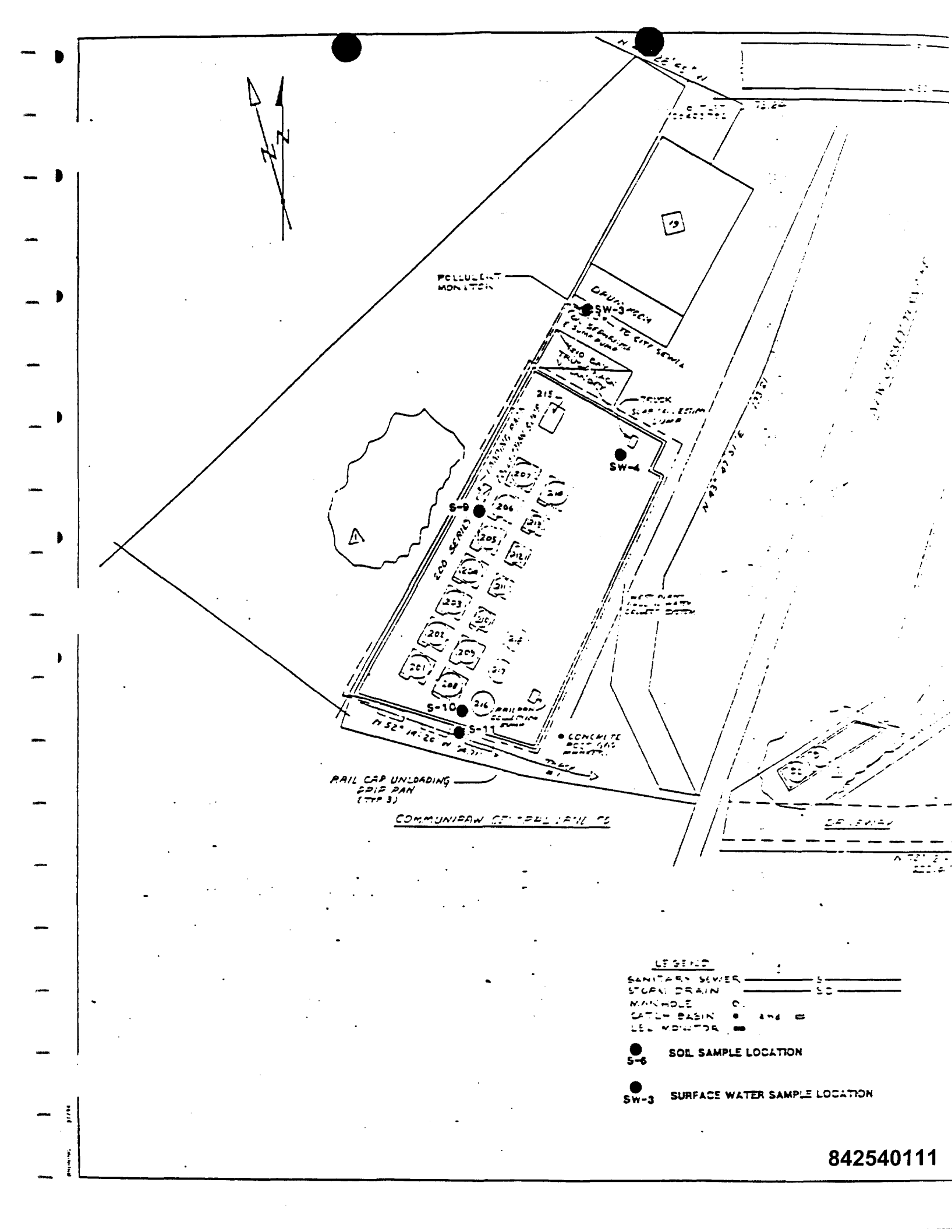
2.2.5 Preliminary Environmental Assessment - As part of the facility modernization program, personnel from T. M. Gates, Inc. visited the Newark IC & S facility on December 21, 1987, performed a visual inspection of the site, and collected surface water and soil samples for chemical analysis. In general, the condition of the IC & S facility was characterized as similar to surrounding facilities which are generally old and not well main-

tained. The facility appeared to be heavily utilized and no state-of-the-art handling and containment systems were readily apparent.

Figure 5 shows the sampling locations for surface water and soil samples collected on December 21, 1987. Table 2 contains a description of the sampling locations shown on Figure 5, and Table 3 contains a summary of the analytical results. Chemical analyses were performed using EPA Methods 8010/601 and 8020/602 as set forth in SW-846, "Test Methods for Evaluating Solid Wastes".

Inspection of Table 3 shows that elevated levels of various parameters (primarily volatile organics) were detected at nearly all sampling locations. As a consequence, Ashland has tacitly assumed that remedial activities should be designed to address virtually the entire IC & S plant area.

2.2.6 Surficial Soils - In order to develop the area surrounding the Newark IC & S facility, appreciable fill and grade activities were required to elevate the land surface above the tidal swampland. Initial filling and development began in the early 1900's and to some extent continue today. As a consequence of extensive filling and the general non-agricultural nature of the area, no soils maps for the area have been developed by the United States Department of Agriculture, Soil Conservation Service. However, based on the character of the surficial soils, they would be classified Urban Land, and their physical, chemical, and hydraulic characteristics will vary appreciably depending on the nature of fill utilized.


POLLUTANT MONITOR
SW-3
SW-4
S-9
S-10
S-11
215
206
216
RAIL CAR UNLOADING DRIP PAN (TYP 3)
LEGEND
SANITARY SEWER
STORM DRAIN
MANHOLE
CATCH BASIN
S-6 SOIL SAMPLE LOCATION
SW-3 SURFACE WATER SAMPLE LOCATION

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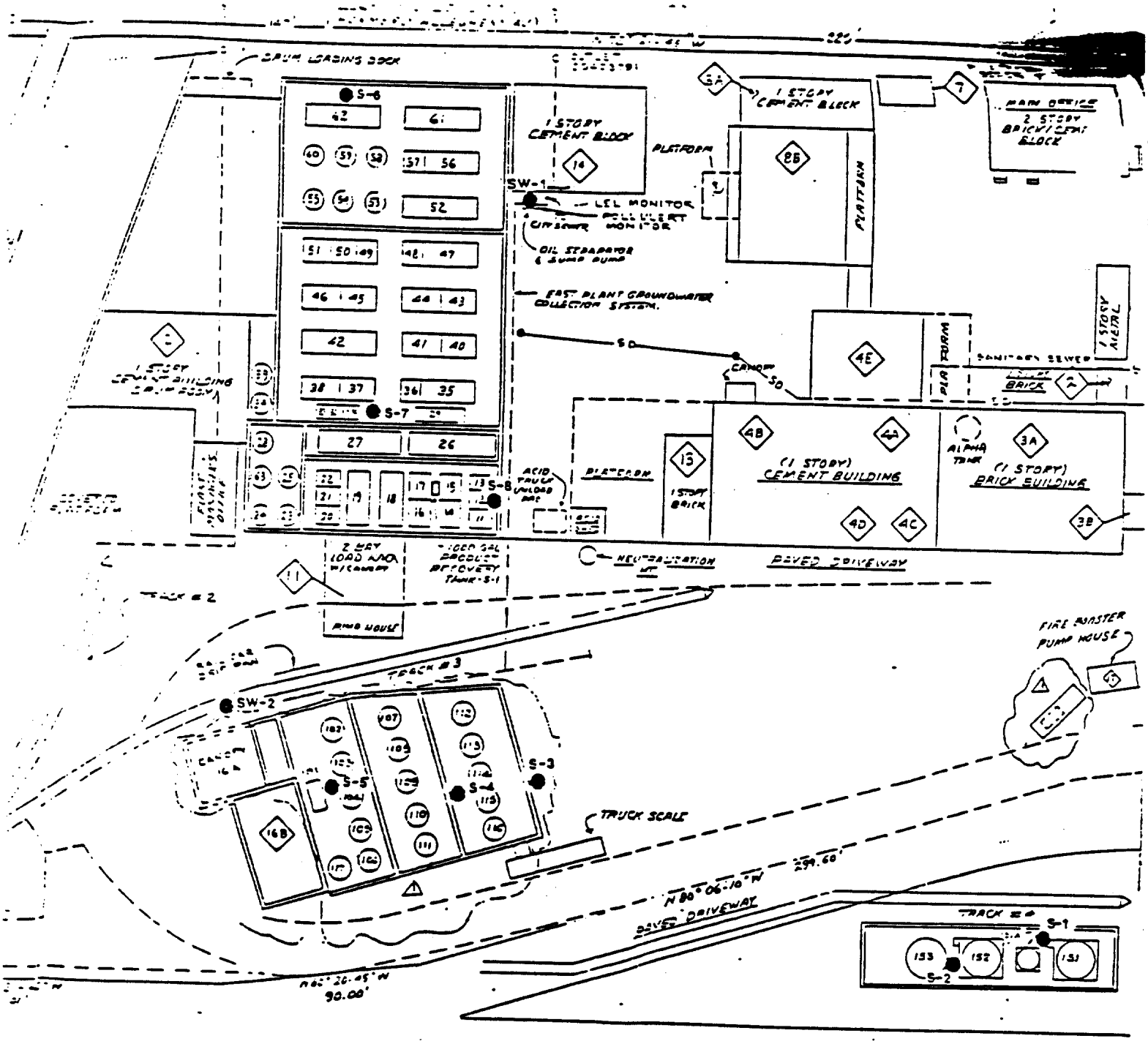

REV.	DATE	DESCRIPTION	APPR.
		REVISIONS	

ASHLAND CHEMICAL COMPANY
A DIVISION OF ASHLAND OIL, INC.

APPROVED	PLANT NEWARK, N.J.	FIGURE 5	
BY DATE	UNIT-BLDG.		
	AFE	SAMPLING LOCATIO	
	DRAWN	SCALE	DRAWING NO. 7471-ZD-1 REV 0
	DATE	FILE NO.	

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ASHLAND CHEMICAL COMPANY - NEWARK, NEW JERSEY

TABLE 2

DESCRIPTION OF SAMPLING LOCATIONS

SAMPLE NO.	DESCRIPTION
	EAST PLANT
SW-1	- East plant groundwater collection sump
SW-2	- Standing water along rail siding
S-1	- Soil, southeast tank farm
S-2	- Soil, southeast tank farm
S-3	- Soil, east of 100 series tank farm
S-4	- Soil, 100 series tank farm
S-5	- Soil, 100 series tank farm
S-6	- Soil, 10 series tank farm
S-7	- Soil, 10 series tank farm
S-8	- Soil, 10 series tank farm
	WEST PLANT
SW-3	- West plant groundwater collection sump
SW-4	- Standing water in 200 series tank farm
S-9	- Soil, 200 series tank farm
S-10	- Soil, 200 series tank farm
S-11	- Soil, rail car unloading area south of 200 series tank farm

ASHLAND CHEMICAL COMPANY - NEWARK, NEW JERSEY

TABLE 3

SUMMARY OF ANALYTICAL DATA
(concentration in ppm)

	EAST PLANT											WEST PLANT					
	SW-1 WATER	SW-2 WATER PHASE	SW-2 SINKER PHASE	S-1 SOIL	S-2 SOIL	S-3 SOIL	S-4 SOIL	S-5 SOIL	S-6 SOIL	S-7 SOIL	S-8 SOIL	SW-3 WATER	SW-4 WATER PHASE	SW-4 FLOATER PHASE	S-9 SOIL	S-10 SOIL	S-11 SOIL
Purgeables																	
bromodichloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
bromoform	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
bromomethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
carbon tetrachloride	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
chlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
chloroethane	10	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
2-chloroethylvinyl ether	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
chloroform	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
chloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
dibromochloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,2-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,3-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,4-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
dichlorodifluoromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,1-dichloroethane	3.5	(3.3	55	(3.3	(3.3	(0.33	(0.005	130	(0.005	9.5	(3.3	(0.005	(0.13	(12	(0.33	4.5	(3.3
1,2-dichloroethane	(0.08	(3.3	180	(3.3	(3.3	(0.33	(0.005	0.30	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,1-dichloroethylene	(0.08	8.5	1,900	(3.3	(3.3	(0.33	(0.005	170	(0.005	(3.3	(3.3	(0.005	0.23	(12	(0.33	8.0	(3.3
trans-1,2-dichloroethene	0.79	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,2-dichloropropane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
cis-1,3-dichloropropene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
trans-1,3-dichloropropene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
methylene chloride	0.44	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,1,2,2-tetrachloroethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
tetrachloroethylene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	21	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
1,1,1-trichloroethane	1.2	990	130,000	(3.3	(3.3	(0.33	(0.005	11,000	(0.005	(3.3	7.5	0.005	19	69	24	370	(3.3
1,1,2-trichloroethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
trichloroethylene	(0.08	(3.3	16	(3.3	(3.3	(0.33	(0.005	1.8	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
trichlorofluoromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
vinyl chloride	0.34	(3.3	(13	(3.3	(3.3	(0.33	0.12	5.0	(0.005	4.9	9.4	(0.005	(0.13	(12	0.87	(0.33	(3.3
benzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	0.11	(0.08	(0.005	4.2	(3.3	(0.005	(0.13	(12	(0.33	(0.33	(3.3
ethylbenzene	(0.08	(3.3	(13	6,200	88	9.4	1.2	(0.08	(0.005	6.1	24	(0.005	(0.13	(12	(0.33	(0.33	(3.3
toluene	(0.08	(3.3	(13	3.3	16	(0.33	0.17	1.5	0.07	52	160	(0.005	(0.13	(12	(0.33	(0.33	(3.3
xylenes	(0.08	43	(13	430	11	9.7	0.46	0.12	(0.005	160	71	(0.005	(0.13	(12	2.0	46	260
acetone	(4.0	(180	(850	(180	(180	(17	(0.3	(4.0	(0.3	(180	(180	(0.30	(1.3	(120	(17	(17	(180
4-methyl-2-pentanone (MIBK)	(4.0	(180	(850	(180	(180	3.4	(0.3	(4.0	(0.3	120	78	(0.30	(1.3	(120	(17	3.5	(180
2-butanone (MEK)	(4.0	(180	(850	(180	(180	(17	(0.3	(4.0	(0.3	(180	(180	(0.30	(1.3	(120	(17	(17	(180
hexane	(0.40	(18	(85	(18	(18	(1.7	(0.03	(0.40	(0.03	(18	(18	(0.03	(0.65	(60	(1.7	(1.7	(18
heptane	(0.40	(18	(85	(18	(18	(1.7	(0.03	(0.40	(0.03	(18	(18	(0.03	(0.65	(60	(1.7	(1.7	(18
VM & P naphtha	(13	(330	(1,300	(330	(330	(33	(0.5	(6.0	(0.5	(330	(330	(0.5	(13	(1,200	(33	(33	(330
mineral spirits	(13	3,400	(1,300	(330	(330	1,100	2.1	8.3	(0.1	(330	(330	(0.5	(13	(1,200	410	4,400	14,000
140 solvent	(26	(660	(2,600	(660	(660	(66	(1.0	(16	(1.0	(660	(660	(1.0	(26	(2,400	(66	(66	(660
TOTAL ORGANICS	16.27	4,351.5	132,151	6,630	115	1,132.6	4.36	11,[illegible]	[illegible]	3[illegible].7	341.9	0.005	19.23	69	436.87	4,8[illegible].0	14,260

2.2.7 Topography and Drainage

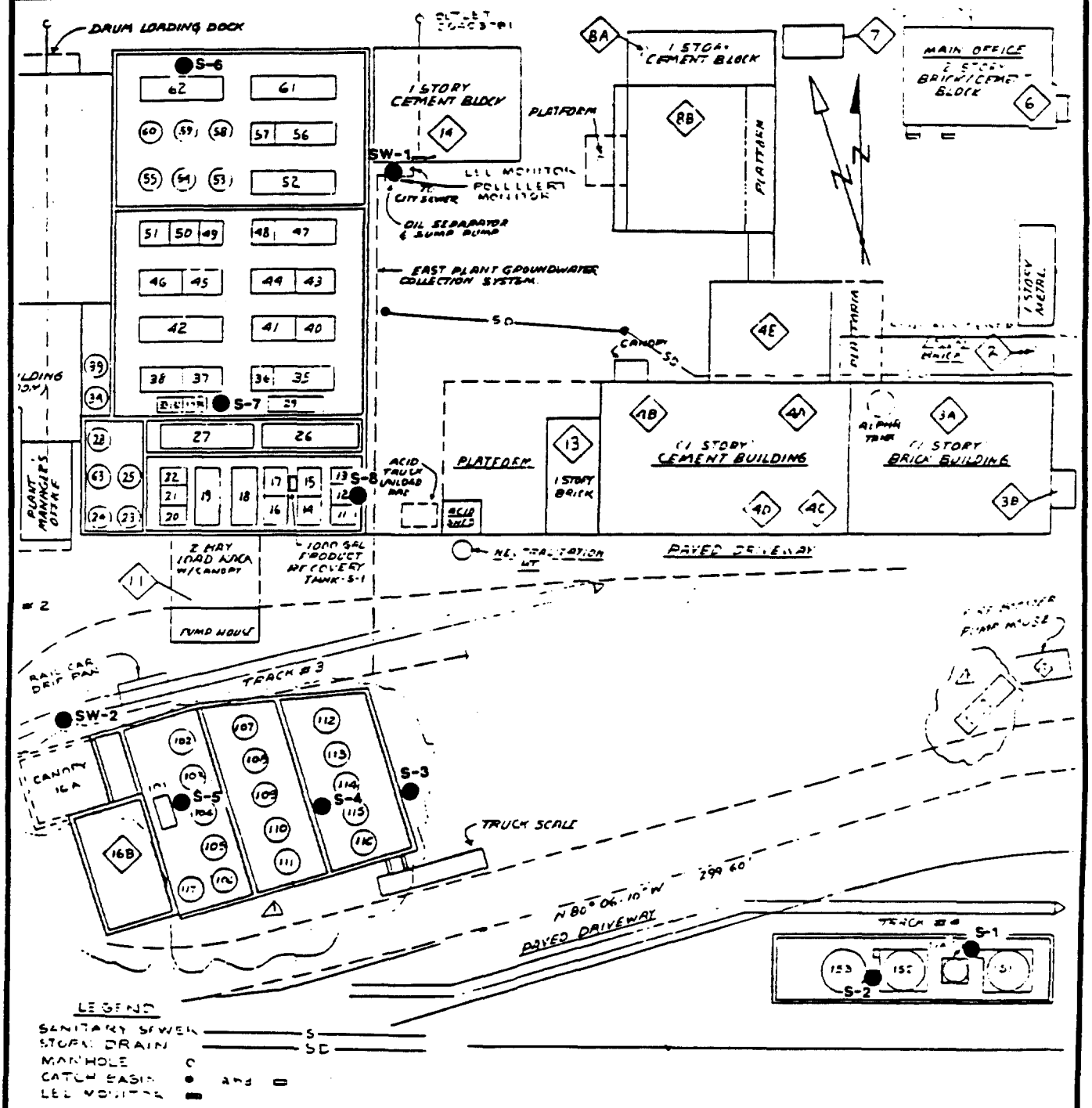
2.2.7.1 Topography - The site's current morphology and topography are attributable to the extensive fill and grade activities, which were required to elevate the land surface above the tidal swampland prior to site development. As a consequence, the existing site topography is virtually flat.

2.2.7.2 Site Drainage - The entire Newark IC & S facility is located in a low area of fill with almost no slope within the plant. On the south side of the property, a 20 foot high railroad embankment acts as a drainage barrier which is penetrated only by P Avenue. Similarly, the New Jersey Turnpike runs roughly north-south through the center of the property and prevents east-west flow except at Foundry Street and a railroad underpass at the north and south ends of the property, respectively. During large storm events, some run-off reaches Foundry Street and flows to the corner of P Avenue where the lowest elevation near the plant occurs. City storm sewers exist on the northwest side of the turnpike embankment and on P Avenue on the southeast side of the plant. These storm sewers collect excess run-off from the plant. However, appreciable quantities of standing water accumulate on-site prior to the discharge of storm run-off to the storm sewers.

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

FIGURE 14

SAMPLE LOCATION PLAN



T.M. GATES, INC.

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ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 2

DESCRIPTION OF SAMPLING LOCATIONS

SAMPLE NO.	DESCRIPTION
	EAST PLANT
SW-1	- East plant groundwater collection sump
SW-2	- Standing water along rail siding
S-1	- Soil, southeast tank farm
S-2	- Soil, southeast tank farm
S-3	- Soil, east of 100 series tank farm
S-4	- Soil, 100 series tank farm
S-5	- Soil, 100 series tank farm
S-6	- Soil, 10 series tank farm
S-7	- Soil, 10 series tank farm
S-8	- Soil, 10 series tank farm

ASHLAND CHEMICAL - NEWARK, NEW JERSEY

TABLE 3

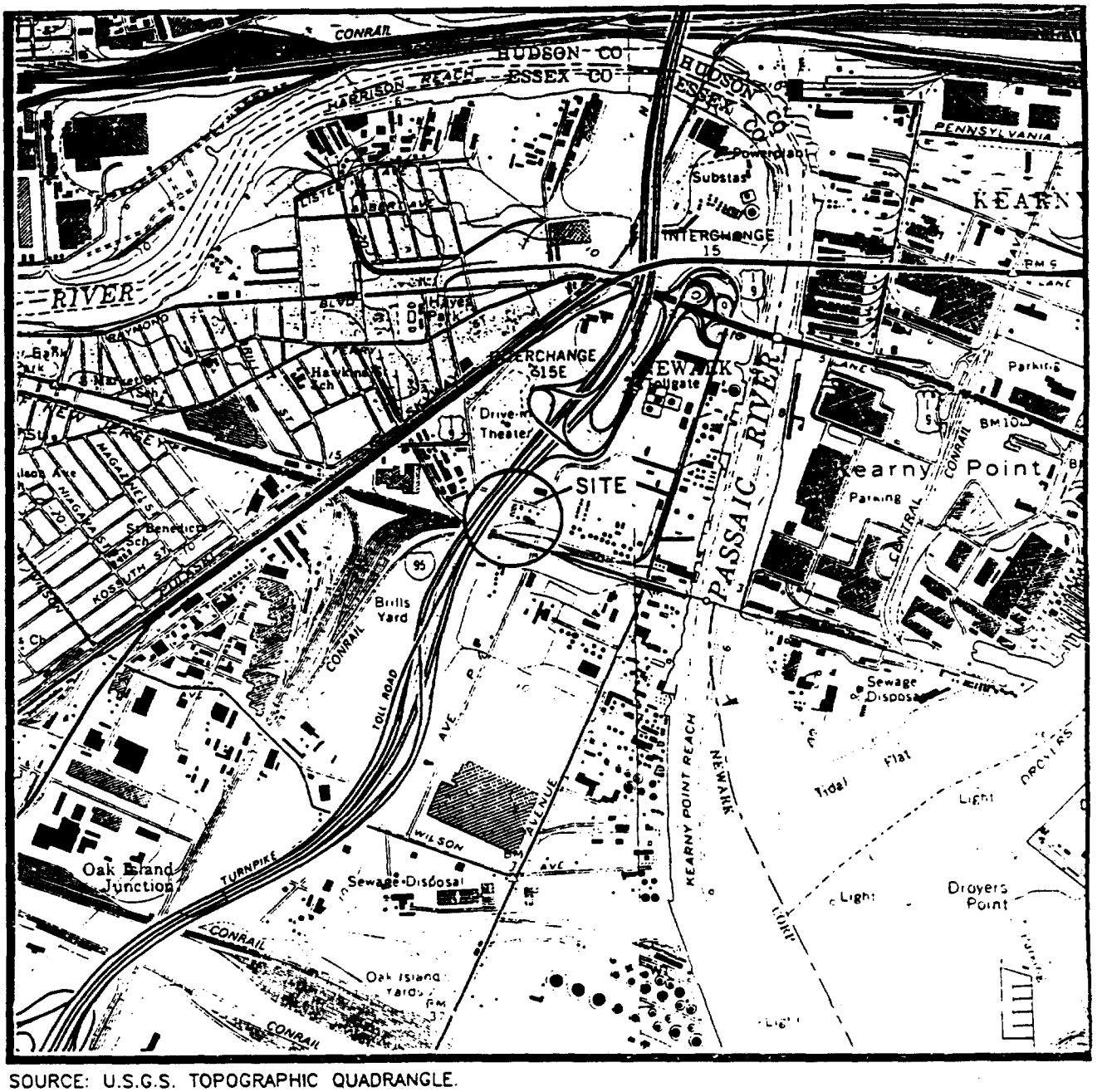
SUMMARY OF ANALYTICAL DATA
(concentration in ppm)

	EAST PLANT										
	SW-1 WATER	SW-2 WATER PHASE	SW-2 SINKER PHASE	S-1 SOIL	S-2 SOIL	S-3 SOIL	S-4 SOIL	S-5 SOIL	S-6 SOIL	S-7 SOIL	S-8 SOIL
Purgeables											
bromodichloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
bromoform	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
bromomethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
carbon tetrachloride	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chloroethane	10	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
2-chloroethylvinyl ether	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chloroform	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
chloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
dibromochloromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,2-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,3-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,4-dichlorobenzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
dichlorodifluoromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,1-dichloroethane	3.5	(3.3	55	(3.3	(3.3	(0.33	(0.005	130	(0.005	9.5	(3.3
1,2-dichloroethane	(0.08	(3.3	180	(3.3	(3.3	(0.33	(0.005	0.30	(0.005	(3.3	(3.3
1,1-dichloroethylene	(0.08	8.5	1,900	(3.3	(3.3	(0.33	(0.005	170	(0.005	(3.3	(3.3
trans-1,2-dichloroethene	0.79	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,2-dichloropropane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
cis-1,3-dichloropropene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
trans-1,3-dichloropropene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
methylene chloride	0.44	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
1,1,2,2-tetrachloroethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
tetrachloroethylene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	21	(3.3
1,1,1-trichloroethane	1.2	900	130,000	(3.3	(3.3	(0.33	(0.005	11,000	(0.005	(3.3	7.5
1,1,2-trichloroethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
trichloroethylene	(0.08	(3.3	16	(3.3	(3.3	(0.33	(0.005	1.8	(0.005	(3.3	(3.3
trichlorofluoromethane	(0.08	(3.3	(13	(3.3	(3.3	(0.33	(0.005	(0.08	(0.005	(3.3	(3.3
vinyl chloride	0.34	(3.3	(13	(3.3	(3.3	(0.33	0.12	3.0	(0.005	4.9	9.4
benzene	(0.08	(3.3	(13	(3.3	(3.3	(0.33	0.11	(0.08	(0.005	4.2	(3.3
ethylbenzene	(0.08	(3.3	(13	6,200	88	5.4	1.2	(0.08	(0.005	6.1	24
toluene	(0.08	(3.3	(13	3.3	16	(0.33	0.17	1.5	0.07	52	160
xylenes	(0.08	43	(13	430	11	9.7	0.46	0.12	(0.005	160	71
acetone	(4.0	(180	(850	(180	(180	(17	(0.3	(4.0	(0.3	(180	(180
4-methyl-2-pentanone (MIBK)	(4.0	(180	(850	(180	(180	3.4	(0.3	(4.0	(0.3	120	78
2-butanone (MEK)	(4.0	(180	(850	(180	(180	(17	(0.3	(4.0	(0.3	(180	(180
hexane	(0.40	(18	(85	(18	(18	(1.7	(0.03	(0.40	(0.03	(18	(18
heptane	(0.40	(18	(85	(18	(18	(1.7	(0.03	(0.40	(0.03	(18	(18
VM & P naphtha	(13	(330	(1,300	(330	(330	(33	(0.5	(8.0	(0.5	(330	(330
mineral spirits	(13	3,400	(1,300	(330	(330	1,100	2.1	8.3	(0.1	(330	(330
140 solvent	(26	(660	(2,600	(660	(660	(66	(1.0	(16	(1.0	(660	(660
TOTAL ORGANICS	16.27	4,351.5	132,151	6,630	115	1,122.6	4.16	11,375.02	0.07	377.7	349.3

FIGURE 1

SITE LOCATION

ASHLAND CHEMICAL, INC.
NEWARK, NEW JERSEY



SOURCE: U.S.G.S. TOPOGRAPHIC QUADRANGLE.
ELIZABETH AND JERSEY CITY QUADRANGLES.
7.5 MINUTE SERIES.
1967; PHOTOREVISED 1981.

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GROUNDWATER TECHNOLOGY, INC.

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ATTACHMENT 6

SES Question 5

Description of Operations

Ashland Chemical Company, a Division of Ashland Oil, Inc., Newark Industrial Chemicals and Solvents Division, has been operating as an industrial chemicals and solvents distributor at this site since 1968 until the present time. In 1967, Ashland Chemical Industrial Chemicals and Solvents Division was formed by purchasing several multi and single-plant chemical distributors. A legal description of the property is included as Attachment 7.

Ashland Chemical has warehouse storage of packaged chemicals in drums and bags. It also has bulk storage of chemicals and solvent in 71 tanks. These products are sold in bulk via tank truck to customers and are also transferred to 55-gallon drums for sale to customers. A tank list is attached which lists the products presently stored in each tank. The layout of the facility is described in the attached site map (Attachment 5A).

There are 18 people employed at the plant site. The administrative office for this plant is located in Edison and employs 20 people.

The attached product catalog in Attachment 8 gives more detailed information on the operations and chemicals stored.

nant migration and accumulation, the numerous areas identified in Table 5 occupy the vast majority of the areal extent of the Newark IC & S facility. Considering that the sites topography is virtually flat, and that appreciable ponding of standing water is common after rainfall, it is not unreasonable to assume that the remaining area (i.e., area not cross-hatched) on Figure 17 may also be considered area(s) of potential environmental concern due to the potential for surficial migration and accumulation of contaminants. As a consequence, Ashland has tacitly assumed that the entire Newark IC & S property will be sampled during the ECRA sampling program. This conclusion is supported by the preliminary environmental assessment which revealed above detectable levels in nearly all samples analyzed (see Section 2.2.5).

Additionally, due to the long history during which the facility has been used for essentially the same purpose (i.e., industrial chemicals and solvents distribution), it is not unreasonable to assume that any of Ashland's products may have been handled and/or stored at almost any location on the Newark IC & S property. Therefore, the chemical analysis to be performed will consist of all constituents identified by U.S.EPA Test Methods 8010 and 8020 as set forth in SW-846 "Test Methods for Evaluating Solid Waste" as well as all products on Ashland's product inventory list (see Table 1) which are not identified by Test Methods 8010 and 8020. The complete list of chemical constituents to be analyzed is tabulated in Table 6.

3.2.3 Railroad Tank Car Transfer Areas - Existing and historic railroad tank car transfer areas are designated No. 2 on Figure 17. Chemical handling activities in these areas involve the transfer of incoming bulk product shipments from the railroad tank cars to storage tanks within the various above ground tank farms. The transfers are accomplished via hoses and pumps which are connected to fix above ground piping that transfer product to the tank farms. Although drip pans and/or collection sumps are utilized to collect inadvertent product spillage, the occurrence of surficial soil staining indicates that product spillage may have occurred.

3.2.4 Tank Truck Transfer Areas - Existing and historic tank truck transfer areas are designated No. 3 on Figure 17. These areas include product, fuel oil and diesel fuel transfer areas including the diesel fuel pump and surrounding area located outside the northwest corner of the dike around tanks 151-153, in the southeastern corner of the east parcel*. Chemical handling activities in these areas involve the transfer of incoming bulk product shipments from the tank trucks to the above ground tank farms. Transfers are accomplished via hoses and pumps which are connected to fix above ground piping that transfer product to the tank farms. Similarly, for Ashland customers requiring bulk shipments of product, the process is reversed and product is transferred from the storage tanks to the tank truck for subsequent delivery to the customer.

It should be noted that three (3) transfer areas identified on Figure 17 are utilized for the transfer of

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GROUNDWATER TECHNOLOGY

Groundwater Technology, Inc.
310 Horizon Center Drive, Trenton, NJ 08691
Tel: (609) 587-0300 Fax: (609) 587-7908

REPORT OF FINDINGS
SOIL AND GROUNDWATER INVESTIGATION

ASHLAND CHEMICAL, INC.
221 FOUNDRY STREET
NEWARK, ESSEX COUNTY, NEW JERSEY
ECRA CASE NO. 88695

15 December 1992

Prepared For:

ASHLAND CHEMICAL, INC.
POST OFFICE BOX 2219
COLUMBUS, OHIO 43216

Prepared By:

GROUNDWATER TECHNOLOGY, INC.
310 HORIZON CENTER DRIVE
TRENTON, NEW JERSEY 08691

Lynn L. Carlson
Lynn L. Carlson
Staff Geologist

Paul I. Lazaar
Project Manager

The flat topography is partially a consequence of fill and grade activities which took place in the 1930's and 1940's at the time of site development.

The nearest surface water body is the Passaic River, located approximately 2,000 feet east of the site. The Passaic River flows to the south and discharges into Newark Bay. Surface runoff from the site discharges to the City of Newark combined storm and sanitary sewer system.

1.3 Site Hydrogeology

Based on studies at the Ashland site, all of the shallow monitoring wells and piezometers are located in unconsolidated fill in the shallow water bearing zone. Water table elevation contour maps, developed since 1989, indicate a groundwater flow direction of northeast to east. In 1989, data was collected to monitor diurnal variations in the water table as a result of tidal influences from the Passaic River. The maximum variation in the water table was found to be approximately 0.03 to 0.05 feet; it was concluded that tidal influence on groundwater elevation is negligible.

During this investigation, four deep monitoring wells were installed in the reddish brown clayey to silty fine sand in order to determine groundwater flow direction and groundwater quality in the deeper water bearing zone. Water table elevation contour maps developed for this report indicate a groundwater flow direction of north to northeast.

It has been reported that as a result of over-pumping of regional water supply wells, deep wells within the Brunswick Formation currently contain 2,000 to 3,000 parts per million (ppm) of chloride due to the encroachment of salt water. Consequently, there are no known municipal or domestic wells supplying potable water from the unconsolidated sediments or underlying Brunswick Formation; deep industrial wells in the Newark area are only used for process or cooling water.

In 1989, data collected to assess in-situ permeability of the shallow unconsolidated sediments indicated an average permeability of approximately 0.005 cm/sec. The groundwater gradient across the site varied from 0.0015 in the eastern portion of the site to 0.002 to 0.003 in the western portion. A maximum natural flow rate of 2.5×10^{-5} cm/sec was estimated for the eastern portion of the site. In the western portion of the site, the maximum flow rate was approximately 5×10^{-5} cm/sec. The results of the in-situ permeability and tidal influence studies have previously been submitted to the NJDEPE in the "ECRA Sampling Findings and Proposed Remedial Action" report prepared by TMGI and dated 19 May 1989.

ASHLAND CHEMICAL COMPANY
DIVISION OF ASHLAND OIL & REFINING CO.
400 Doremus Ave.
Newark, N.J. 07105

File

I. INTRODUCTION

This Newark Plant manufactures alkyd resins, polyesters and plasticizers.

A. PLANT STATISTICS

Employees: 141

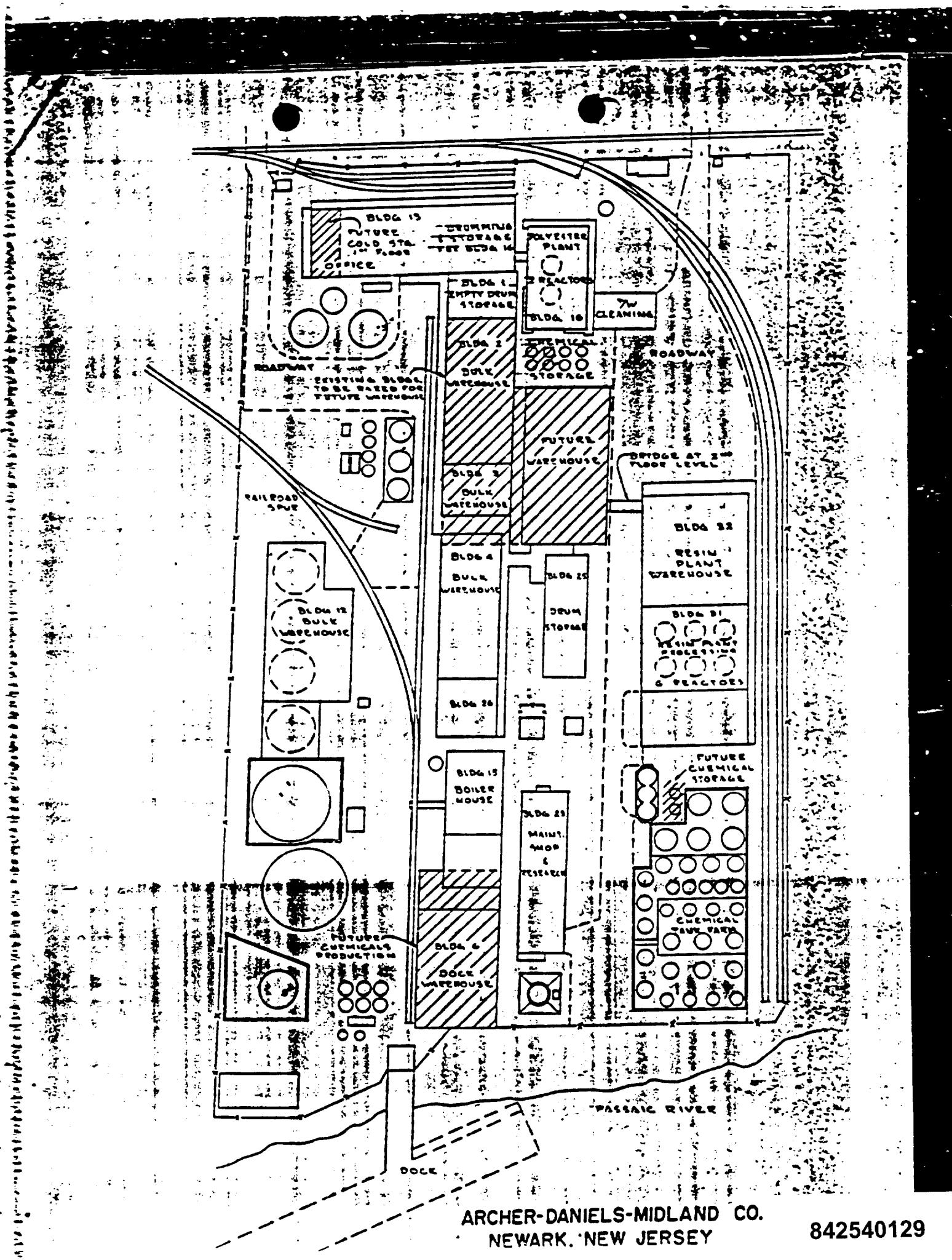
Plant Property:

Production: alkyd resins,
polyesters,
plasticizers

Operating Schedule: 24 hours per day
5 days per week

Water:

Source	Quantity	Usage
City of Newark		Sanitary cooling vapor scrubbers washing solution



ARCHER-DANIELS-MIDLAND CO.
NEWARK, NEW JERSEY

842540129

II. PLANT PROCESSES

A. General

Following is a flow diagram of plant processes:

Raw materials used in production are:

(1) Vegetable Oils- Linseed, Soya, Tung

(2) Polyols

(3) Solvents- Hydrocarbons, Aliphatic and Aromatic

(4) Anhydrides- Phthalic, Maleic, Fumeric

Finished products are:

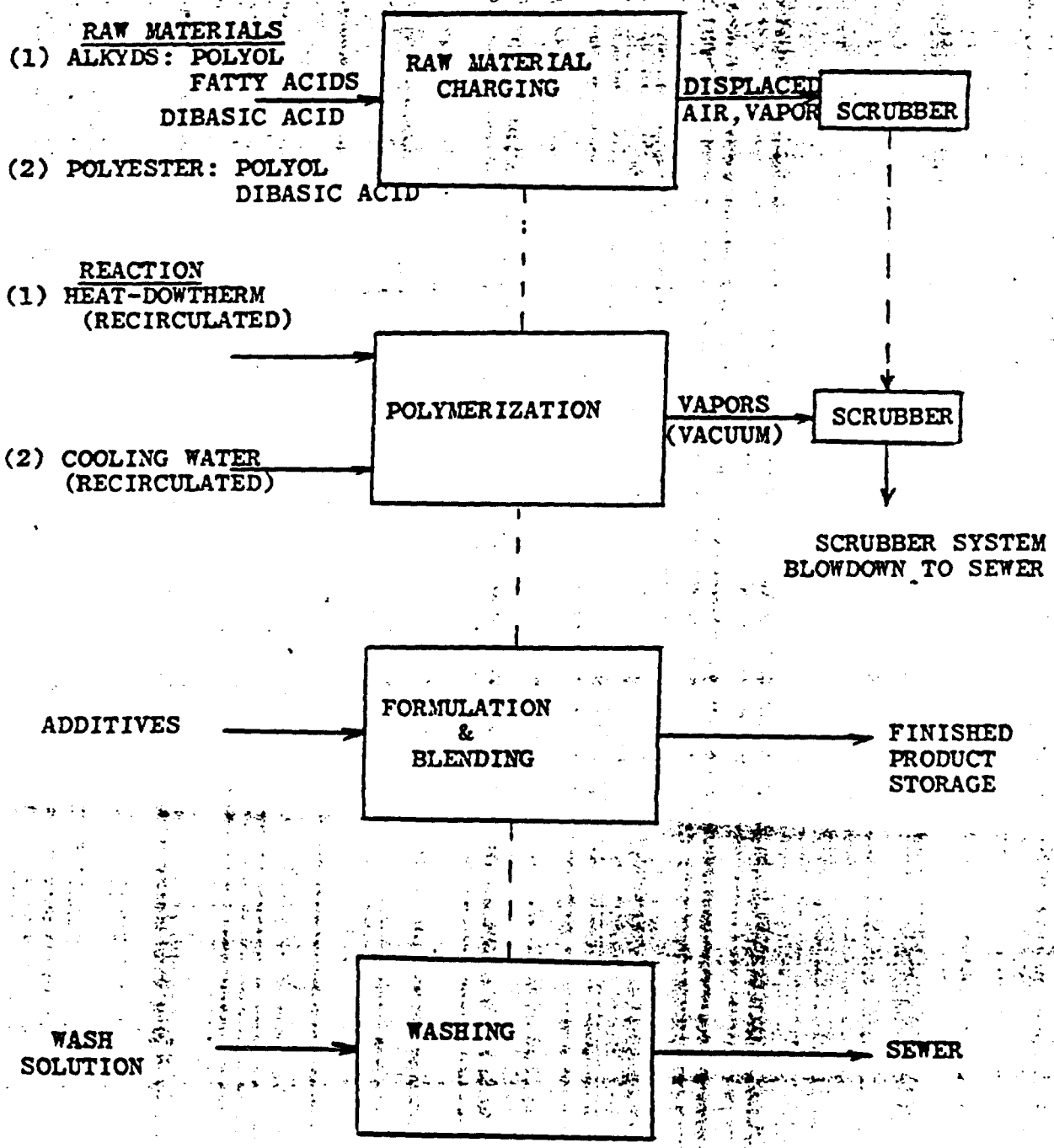
(1) Alkyd resins

(2) Polyesters

(3) Plasticizers

ALKYD & POLYESTER RESINS

FLOW DIAGRAM



842540131

III. WATER USAGE

Only fresh water is utilized by Ashland Chemicals. It is used for sanitary, cooling, fume scrubbers and wash solution.

IV. CHARACTERISTICS OF WASTES

All waste waters with the exception of storm runoff are discharged to the city sewer system. Storm water flows to a public storm sewer passing through Ashland's property and discharging to Newark Bay.

V. POLLUTION POTENTIAL

The pollution potential from Ashland Chemicals is relatively low. However, a number of industries from the west side of Doremus Ave. contribute waste waters to the storm system discharging at the Ashland shoreline. This discharge has been reported to be red at times and clear at other times. At the time of an inspection on 2/28/69, there was a brown discharge which covered an area about 50 feet wide.

VI. EXISTING WASTE TREATMENT FACILITIES

There are no waste treatment facilities at Ashland Chemicals Co.

VII. PRESENT STATUS OF ENFORCEMENT

No water pollution abatement orders or letters have been issued against Ashland Chemicals Newark Plant.

VIII. RECOMMENDED ANALYSIS TO BE RUN ON SAMPLES

Samples from the storm drain which discharges at the Ashland shore line should be analyzed for industrial wastes after the types of contributing industries is determined.

IX. ACKNOWLEDGEMENTS

Mr. T. Lee Paul, Plant Manager, and Mr. R. C. Sterrett of the Company's Air & Water Pollution Group cooperated in a plant visit with Fred Ulrich of the Commission and in providing plant information.

K

842540134

vicinity of Union Carbide and Celanese.

Point 2 - This effluent contained a heavy amount of silt which was probably due to breaks in the pipeline as was indicated by plant personnel.

FU/gig.

SUMMARY OF THE ANALYSES OF SAMPLES TAKEN AT
[redacted]
BY
INTERSTATE SANITATION COMMISSION

Date of Sampling: January 15, 1970

	BOD*	COD	TC	TIC	TOC	Ether Soluble Material	TSS	TVSS	NSS	VNSS	PHOSPHATES Total	PHOSPHATES Ortho	Cu	Zn	Cr	pH	Turbidity	Chlorides	MPN's @1100
Point 1-Drainage Ditch	444	640	251	245	6	26	473	0	34	1	†	†	2.35	.08	0	12.4	160	2760	0
Point 2-Company Drain	372	690	45	33	12	10	1038	18	278	3	2.1	1.3	0.24	.02	0.40	8.9	57	20	700

* The BOD's shown are those obtained at a 600 to 1 dilution. The values obtained at various dilutions were on a sliding scale which is indicative of toxicity.
† A precipitate formed in conducting this test.

NOTES:
1) All values are in milligrams per liter except pH, MPN'S and Turbidity. Turbidity measured in Jackson Turbidity Units.
2) Samples were taken at half hour intervals from 10:00 A.M. to 12:30 P.M. and composited.
3) The sampling points are located on the shoreline.
4) ABBREVIATIONS:
BOD - biochemical oxygen demand
COD - chemical oxygen demand
TC - total carbon
TIC - total inorganic carbon
TOC - total organic carbon
TSS - total suspended solids
TVSS - total volatile suspended solids
NSS - non-settleable solids
VNSS - volatile non-settleable solids
MPN - most probable number of coliform organisms per milliter
Cu - Copper
Zn - Zinc
Cr - Chromium
5) BOD, TC, TIC, TOC, Phosphates, Cu, Zn, Cr were determined on a filtered sample.
6) COD, Ether Soluble, TSS, TVSS, NSS, VNSS, pH, Turbidity [illegible] non-filtered sample.

/gig.

January 2:, 1970.

MEMORANDUM:

To: Dr. Alar I. Mytelka
From: Fred Ulrich

RE: ASHLAND CHEMICAL CO.,
Newark, N J.

Effluent samples were taken at two points on this company's shoreline at half hour intervals from 10:00 A.M. to 12:30 P.M. (600 ml per sample.

POINT 1 - Drainage from ditch on the west side of Doremus Ave. flows under Ashland's property to Newark Bay.

POINT 2 - Cooling water from company.

FIELD OBSERVATIONS:

Point 1 - This effluent caused a white streak in Newark Bay and visibly affected an area of several hundred square feet. pH's ran over 10.0 during the sampling period, which was to be expected, as the flow passes through an area where Union Carbide dumps caustic material.

Companies most likely contributing to the point 1 flow are:

1. Revere Smelting & Refining Co.
2. Celanese Corp.
3. Union Carbide, Linde Division
4. Ashland Chemical Co.

Inspection of the area on the west side of Doremus Ave. revealed a reddish-brown effluent coming from the vicinity of Revere S & R and a gray-white effluent from the general

842540138

Form ECRA-2
6/85

NEW JERSEY DEPARTMENT OF ENVIRONMENT PROTECTION
DIVISION OF WASTE MANAGEM
HAZARDOUS SITE MITIGATION ADMINIS. ATION
BUREAU OF INDUSTRIAL SITE EVALUATION

ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT (ECRA)

APPLICATION FOR ECRA REVIEW
INITIAL NOTICE

SITE EVALUATION SUBMISSION (SES)

This is the second part of a two-part application submittal and must be submitted within 30 days following pu release of the decision to close operations or execution of an agreement of sale or option to purchase.

DATE August 23, 1985

NAME OF INDUSTRIAL ESTABLISHMENT Spencer Kellogg Newark Resin Plant

ADDRESS 400 Doremus Avenue

CITY OR TOWN Newark ZIP CODE 07105

MUNICIPALITY _____ COUNTY Essex

NAME OF PROPERTY OWNER NL Spencer Kellogg Inc., formerly owned by Spencer Kellogg Division of Textron Inc.

FIRM: NL Spencer Kellogg Inc.

DRESS: 1230 Avenue of the Americas

TY OR TOWN: New York ZIP CODE: 10020

MUNICIPALITY _____ COUNTY New York

SUBMIT THE ORIGINAL PLUS TWO COPIES OF THE FOLLOWING:
(NOTE: ITEM FOURTEEN (14) REQUIRES THREE COPIES)

9. A scaled site map identifying all areas where hazardous substances or wastes have been or currently are generated, manufactured, refined, transported, treated, stored, handled or disposed, above or below ground

IS THIS MAP ENCLOSED? ☒ YES (See Appendix # 1) ☐ NO

10. A detailed description of the most recent operations and processes at the industrial establishment organized in the form of a narrative report designed to guide the Department step-by-step through a plant evaluation, with particular emphasis on areas of the process stream where hazardous substances and wastes are generat manufactured, refined, transported, treated, stored, handled or disposed on site, above or below ground. Also identify any floor drains with their points of discharge, septic systems if applicable, seepage pits and dry wells. Please note that establishments which ceased production prior to December 31, 1983, but are subject to ECRA because of on-going storage beyond that date, must provide details on past operations.

IS THIS REPORT ENCLOSED? ☒ YES (See Appendix # 2) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

Received
8/26/85

FOR DEP USE ON

Notice No. _____

842540139

11. A. A description of the types, age (installation date), construction material, capacity, contents, and locations of storage vessels, surface impoundments, landfills, or other types of storage facilities, including drum storage, containing hazardous substances or wastes.

ARE THESE FACILITIES IDENTIFIED ON YOUR SITE MAP OR DESCRIBED IN A NARRATIVE REPORT?
☒ YES (See Appendix # 3 ✓) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

B. The integrity of all underground tanks which contain hazardous wastes or substances must be verified. This may be accomplished in one of several ways: a) Performance of a satisfactory leak test in conformance with Criterion 329 of the National Fire Protection Association, or; b) Performance of subsurface soil investigation (soil borings and analysis), or; c) Excavate and remove the tank and establish the absence of contamination, or; d) other methods approved by the NJDEP.

ARE THE RESULTS OF THE LEAK DETECTION TEST OR THE SUBSURFACE INVESTIGATION ENCLOSED?
☐ YES (See Appendix # _____) ☒ NO

IF YOU HAVE CHECK "NO", STATE THE REASON(S): Subsurface soil investigation will be conducted according with the sampling plan in order to determine the integrity of all underground tanks.

12. A complete inventory of hazardous substances and wastes, including description and locations of all hazardous substances or wastes generated, manufactured, refined, transported, treated, stored, handled or disposed on site, above and below ground, and a description of the location, types and quantities of hazardous substances and wastes that will remain on site. (Attach additional sheets if necessary.) Review N.J.A.C. 7:1E, Appendix A and N.J.A.C. 7:26-8 prior to completing to ensure that all defined hazardous materials are included.

MATERIAL	QUANTITY	LOCATION	STORAGE METHOD	TO REMAIN ON SITE (Yes or No)
See Appendix 4 ✓				

842540140

13. A. A detailed description, date and location on a scaled map of any known spill or discharge of hazardous substances or wastes that occurred during the historical operation of the site and a detailed description of any remedial actions undertaken to handle any spill or discharge of hazardous substances or wastes. (Attach additional sheets if necessary.)

IS THIS INFORMATION ENCLOSED? ☒ YES (See Appendix # 5) ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

ARE THE SPILLS IDENTIFIED ABOVE INDICATED ON THE SCALED SITE MAP? ☒ YES ☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

13 B. If this facility has an approved Spill Prevention Control and Countermeasure Plan (SPCC), enclose a copy with this submittal.

IS YOUR SPCC PLAN ENCLOSED? ☒ YES (See Appendix # 6*)
☐ NO, this facility is not required to have an SPCC plan

14. A. A detailed sampling or other environmental evaluation measurement plan which includes proposed soil, groundwater, surface water, surface water sediment, and air sampling determined appropriate for the site. (This sampling plan must be developed in conformance with ECRA Regulations N.J.A.C. 7:1-3.14 et seq., and Quality Assurance Guidelines as developed by DEP)

ARE THREE COPIES OF THE SAMPLING PLAN ENCLOSED? ☒ YES (See Appendix # 7
☐ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

14. B. If the sampling plan includes groundwater sampling and/or the installation of monitoring wells, the applicant must complete a "Request for Hydrogeologic Assessment" form (blank form attached).

IS GROUNDWATER SAMPLING PROPOSED? ☒ YES ☐ NO

IS THE "REQUEST FOR HYDROGEOLOGIC ASSESSMENT" FORM ATTACHED? ☒ YES (See Appendix # 8)
☐ NO

* The plant's Hazardous Waste Contingency Plan is included as Appendix

842540141

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): _____

15. A detailed description of the procedures to be used to decontaminate and/or decommission equipment and buildings involved with the generation, manufacture, refining, transportation, treatment, storage, handling, or disposal of hazardous wastes or substances including the name and location of the transporter, the ultimate disposal facility, and any other organizations involved.

IS THE DETAILED DESCRIPTION ENCLOSED? ☐ YES (See Appendix # _____) ☒ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): New owner intends to use the facility in essentially the same manner.

16. Copies of all previous soil, groundwater and surface water sampling results, including effluent quality monitoring, conducted at the site of the industrial establishment during the history of ownership/operation by the owner or operator. Also include a detailed description of the location, collection, chain of custody, methodology, analyses, laboratory, quality assurance/quality control procedures, and other factors involved in preparation of the sampling results.

ARE HISTORICAL RESULTS ENCLOSED? ☐ YES (See Appendix # _____) ☒ NO

IF YOU HAVE CHECKED "NO", STATE THE REASON(S): No previous testing

17. List any other information you are submitting or which has been formally requested by this agency:

Appendix 9 - The facility's Hazardous Waste Contingency Plan.

(See following page)

842540142

I hereby certify that this application and any attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true. I am aware that false swearing is a crime in the State of New Jersey. I am cognizant that knowingly providing false information is a violation under ECRA and that "any officer or management official of an industrial establishment who knowingly directs or authorizes the violation of any provisions" of ECRA may be personally liable for penalties of up to $25,000 per day.

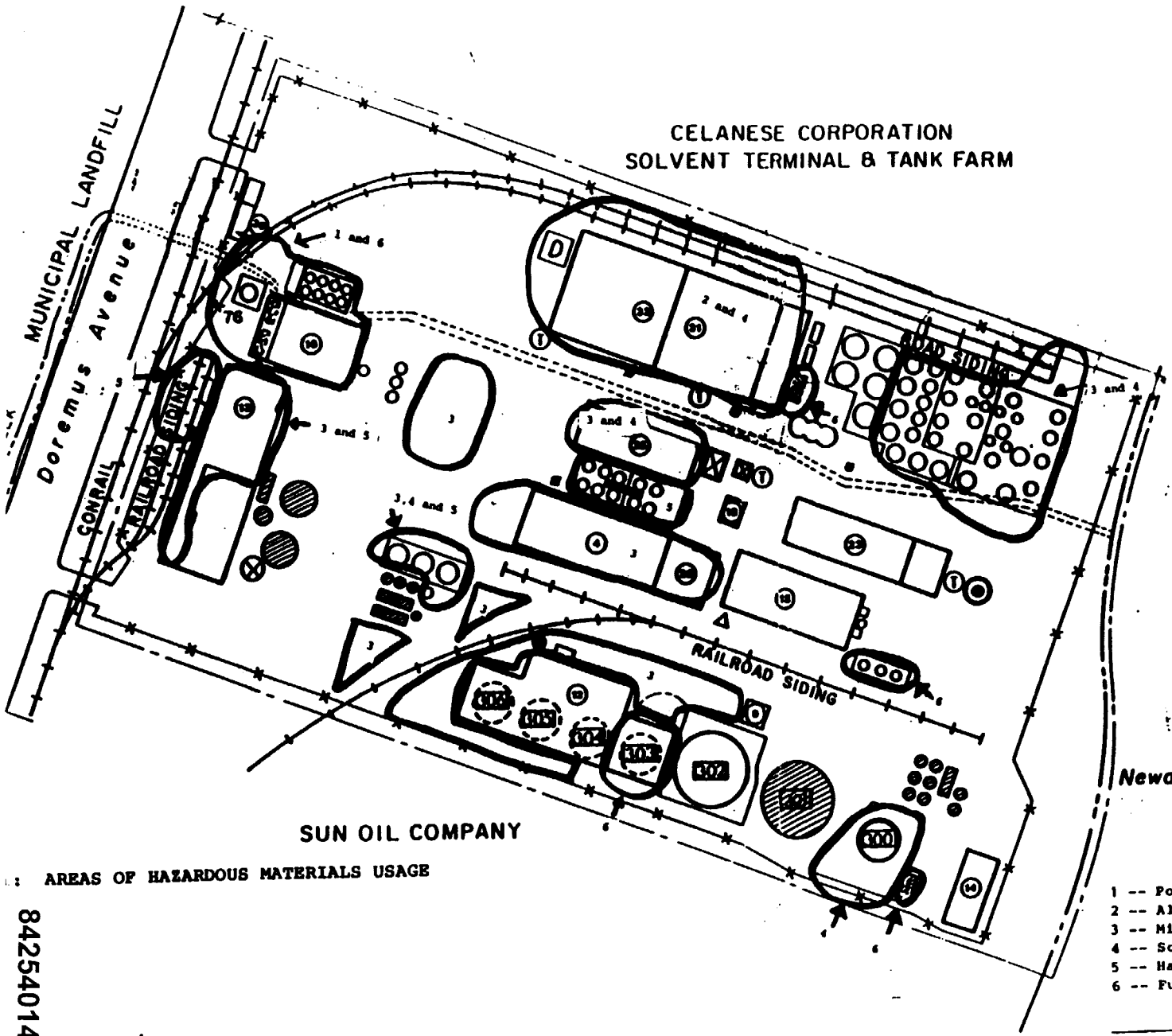
TEXTRON INC.

By: John L. Morse

John L. Morse, Vice President
Risk Management Insurance

August 23, 1985
Date

842540143



: AREAS OF HAZARDOUS MATERIALS USAGE

1 -- Polyester resin: raw material & finished product*
2 -- Alkyd coating resin: raw material & finished product*
3 -- Miscellaneous raw material & finished product*
4 -- Solvents
5 -- Hazardous waste
6 -- Fuel oil

* Some of the constituents of some of these materials may be considered hazardous.

PLANT PROCESS DESCRIPTION ECRA FORM II - #10

The Spencer Kellogg Newark, N.J. Plant is engaged in the manfacture of coating resins used primarily in the paint industry. Raw materials, consisting mainly of vegetable oils, polyols, dibasic acids and anhydrides and various solvents are received in both bulk and packaged quantities. The vegetable oils are received by either rail car or tank truck and are unloaded into storage tanks in the tank farm area east of Bldg. 31. Glycerine (a polyol) and phthalic anhydride are received in tank trucks and unloaded into storage tanks in the same area. Most dibasic acids and some other polyols are received in 50 lb bags by truck and are unloaded at the west end of Bldg. 32 for storage. In addition, trimethylol propane (a polyol) and vinyl toluene (a monomer) are unloaded from either rail cars or tank trucks into storage tanks located between buildings 4 and 25.

Hydrocarbon solvents and alcohols, used as solvents, are received in the plant in both tank truck and 55 gallon drums. Tank trucks are unloaded into storage tanks in the tank farm east of Bldg. 31. Drum quantities are unloaded and stored on pallets in the outside yard area east of Bldg. 25 or on the fifth floor of Bldg. 32.

These bulk raw materials are combined by pumping thru closed piping systems to meters and/or weigh tanks and are then charged to one of the resin reactors located on the fourth floor of Bldg. 31. Bagged raw materials are manually charged to the resin reactor from the 5th floor of Bldg. 31. This raw material charge is reacted at temperatures between 250°F and 600°F to form a resin product. During this reaction period some water of esterification is formed which is separated from solvents and other organics in a receiver tank. The water of esterification is then discharged to the Passaic Valley Sewerage Commission System.

The finished resin products are then partly diluted with various solvents in the resin reactors and transferred to a resin thin tank to which additional quantities of solvents are added in order to adjust products to specifications. These solvents are pumped directly to the thin tank through a solvent meter that determines quantity of solvent added to the thin tank. The thin tanks are located on the three lower floors of Bldg. 31. The products are then filtered using a paper dressed, plate and frame filter press, to drums on the second floor of Bldg. 31 or to stroage tanks located throughout the plant.

During the filtration a quantity of diatomaceous earth is added to the thin tank to aid in the filtration. When filtration is completed, the filter press is blown dry with nitrogen gas and the filter cake and press paper are removed from the press on the third floor of Bldg. 31 and 32. This press cake and paper are transferred to open head drums of hazardous waste. The drums are properly stencilled and closed. They are then transported via elevator and lift truck to the first floor of Bldg. 13 where they are held for disposal until a full truck load quantity is accumulated (approximately once per month). When a full truck load (80 drums) has been collected, the drums are opened, checked for liquids etc., closed, and labelled with hazardous waste labels and flammable solid labels. They are then shipped, properly manifested, to a Chemical Waste Management site at Emelle, Alabama for proper disposal. There are no hazardous wastes disposed of at the Newark site.

The products produced are loaded into drums in a drumming area on the second floor of Bldg. 31 or loaded into tank trucks from storage tanks at various locations throughout the plant. These locations for tank truck loading are (1) west end of Bldg. 4, (2) south side of Bldg. 31, (3) north side of Bldg. 25, and (4) south side of tank farm that is located east of Bldg. 31. On occasion, lines must be washed with solvents and this solvent is collected in drums and recycled back into our process.

Tank truck loading of products requires straining of product through a strainer bag of cotton and/or nylon. These bags are thoroughly drained and disposed of with filter press waste as hazardous waste. Bag drainings are recycled to the process or collected as 1285 premix which is then disposed of as bulk liquid hazardous waste, properly manifested to Solvents Recovery Service in Linden, N.J.

TANK INVENTORY-RAW [redacted]ERIALS-BETWEEN BLDGS. 4 & 25

NEWARK, NEW JERSEY-RESINS AND PLASTICS DATE _____

TANK NO.	PRODUCT	CAPACITY	GPI	TEMP.	MATERIAL RECD. BY	TANK CONSTRUCTION
127	NOT IN USE	15000	49			316 SS
128	TRIMETHYCOL PROPANE	15000	49		T/C-T/W	316 SS
129	NOT IN USE	15000	49			304 SS
130	NEOPENTYL GLYCOL 30-367	15000	49		T/W	304 SS
131	PROPYLENE GLYCOL 30-016	15000	49		T/W	CARBON STEEL
132	STYRENE 30100	15000	49		T/W	PLASTIC LINED CARBON STEEL
133	VINYL TOLUENE 30104	15000	49		T/C-T/W	PLASTIC LINED CARBON STEEL
134	VINYL TOLUENE 30104	15000	49		T/C-T/W	PLASTIC LINED CARBON STEEL
135	NOT IN USE	15000	49			CARBON STEEL
136	NOT IN USE	15000	49			PLASTIC LINED CARBON STEEL
76	NOT IN USE	20700	96			ALUMINUM
105	NOT IN USE	10283	54			STEEL
106	NOT IN USE	10283	54			STEEL
107	NOT IN USE	10283				STEEL
	No.2 Fuel Oil-NOT IN USE				Underground adjacent to boiler room	UNKNOWN
	No.2 Fuel Oil-NOT IN USE				Located adjacent to building 16	UNKNOWN
	No.2 Fuel Oil-NOT IN USE				Located adjacent to building 16	UNKNOWN
79	NOT IN USE	3000			3rd floor Bldg. 31	STEEL
300	NOT IN USE	259000			Diked area of yard	STEEL
309	NOT IN USE	47000			Diked area of yard	STEEL

0-100 Drums containing hazardous waste stored between tanks 300 and 302.
Several portable tanks containing hazardous waste stored between tanks 300 and 302.

ALL TANKS ARE 10FT DIAM. X 26FT HIGH

INSTALLATION DATE-----1975

REVISED DATA - 5/29/85 AED

842540147

TANK FARM INVENTORY

TANK NO.	PRODUCT	CAPACITY	GPI	INSTALLED	MATERIAL RECD. BY	TANK CONSTRUCTION
1	PAMAK 4A	50,000	195	1948	T/C-T/W	347 CLAD SS
2	Superior Linseed Oil	50,000	195	1948	T/C-T/W	347 CLAD SS
3	Unfiltered #1 Castor Oil	50,000	195	1948	T/W	347 CLAD SS
4	#1 FILTERED CASTOR	50,000	195	1948	T/W	CARBON STEEL
5	Unfiltered Extra Pale Castor Oil	50,000	195	1948	T/W	CARBON STEEL
6	Glycerine	20,000	96	1948	T/w	304 SS
7	SUNFLOWER FATTY ACID	13,000	54	1948	T/C-T/W	304 SS
8	O/R SOYBEAN	20,000	96	1948	T/C-T/W	CARBON STEEL
9	FUEL OIL	20,000	96	1948	T/W	CARBON STEEL
10	150 SOLVENT	20,000	96	1948	T/W	CARBON STEEL
11	XYLOL	20,000	96	1948	T/W	CARBON STEEL
12	EXEMPT. M.S.	20,000	96	1948	T/W	CARBON STEEL
13	O/R SOYBEAN	20,000	96	1948	T/W	CARBON STEEL
14	O/R SOYBEAN	20,000	96	1948	T/C-T/W	CARBON STEEL
15	KELLIN T-33	20,000	96	1948	T/C	CARBON STEEL
16	EXEMPT V.M.P.	20,000	96	1948	T/W	CARBON STEEL
17	UNFLT EXTRA PALE C/O	20,000	96	1948	T/W	CARBON STEEL
18	XYLOL	20,000	96	1948	T/W	CARBON STEEL
19	EXEMPT M.S.	20,000	96	1948	T/W	CARBON STEEL
20	RC 3553	20,000	96	1948	PLANT PRODUCT	CARBON STEEL
21	Pamolyn 200	13,000	54	1948	T/C-T/W	304 SS
22	NOT IN USE	13,000	54	1948	T/W	304 SS
23	O.M.S.	13,000	54	1948	T/W	CARBON STEEL
24	TOLUOL	13,000	54	1948	T/W	CARBON STEEL
25	Rec. Methanol	13,000	54	1948	FROM PLANT	CARBON STEEL
26	P5555-MO-45	13,000	54	1948	PLANT PRODUCT	CARBON STEEL
27	1241-M-60HV	13,000	54	1948	PLANT PRODUCT	CARBON STEEL
28	NOT IN USE	13,000	54	1948		CARBON STEEL
29	NOT IN USE	13,000	54	1948		CARBON STEEL
30	Ethyal Benzene	13,000	54	1948	T/W	CARBON STEEL
31	PHTHALIC ANHYDRIDE	29,500	273.54	1978	T/W	304 SS
32	NOT IN USE	13,000	54	1948		CARBON STEEL
33	NOT IN USE	13,000	54	1948		CARBON STEEL
111	BUTYL CELLOSOLVE	15,288	49		T/W	CARBON STEEL
112	Synethol Acids Recovered	14,218	59		PLANT BY-PRODUCT	ALUMINUM
113	SEC BUTYL ALCOHOL	5,900	49	1965	T/W	CARBON STEEL
114	Sec. Butanol	5,900	49	1965	T/W	CARBON STEEL
115	Ethanol	5,900	49	1965	T/W	CARBON STEEL
116	ETHANOL	5,900	49	1965	T/W	CARBON STEEL

REVISED DATA 5/29/85 AED

842540148

SPENCER KELLOGG - TEXTRON - NEWARK, NJ

HAZARDOUS MATERIALS STORAGE

MATERIAL	QUANTITY	LOCATION	STORAGE METHOD
Adipic Acid	4330 lbs	Bldg.32-5th Fl.	Bags
Ammonium Hydroxide	16,700 lbs	Bldg.32-1st Fl.	Drums
Benzoic Acid	12,694 lbs	Bldg.32-5th Fl.	Bags
Butyl Acetate	-	Bldg.32-4th Fl.	Drum
Formaloehyde (37%)	1370 lbs	Bldg.31-1st Fl.	Drum
Ethyl Benzene	25,523 lbs	Tank #30	Bulk
Maleic Anhyoride	27,600 lbs	Bldg.32-5th Fl.	Bags
Methyl Methacrylate	670 lbs	Bldg.32-5th Fl.	Drum
Mineral Spirits	60,377 lbs	Tanks #12 & 19	Bulk
Phospheric Acid (85%)	286 lbs	Bldg.31-4th Fl.	Drum
Sodium Hydroxide (Caustic)	~4,000 lbs	Bldg.32-5th Fl.	Drum
Sulfuric Acid	124 lbs	Bldg.31-4th Fl.	Drum
Toluene	34,139 lbs	Tank #24	Bulk
VM & P	86,279 lbs	Tank #16	Bulk
Xylene	63,707 lbs	Tanks #11 & 18	Bulk
Vinyl Toluene	62,584 lbs	Tanks #133 & 134	Bulk
#6 Fuel Oil	70,000 Gallons	Tanks #303 & 320	Bulk
Odorless Mineral Spirits	37,813 lbs	Tank #23	Bulk
Solvent 150	30,080 lbs	Tank #10	Bulk

0-100 Drums containing hazardous waste stored between tanks 300 and 302.

Several portable tanks containing hazardous waste stored between tanks 300 and 302.

All materials to remain on site because the business is being continued by the purchaser.

Spencer Kellogg

ECRA Case #85403

Appendix 5

Description of Spill or Discharge

During the operation of the facility, the following spills or discharges are known to have occurred. Each area will be assessed during the sampling program either directly or indirectly.

1. On or about August 19, 1976, the sanitary sewer line ruptured. The material in the sewer line apparently drained into the underground flume and was discharged into Newark Bay. Approximately 20,000 pounds of caustic wash had been discharged into the sanitary sewer atounr this time, but the amount of material that actually leaked from the samitary sewer is unknown since the pipes are underground. At the time of the incident, the Coast Guard, USEPA, Passaic Valley Sewage Commission and Ashland Chemicals (through the Emergency Reporting System) were notified. An attempt was also made to notify NJDEP. No citations were issued, and a new sewer pipe was installed and approved by the City of Newark.

2. On June 29, 1977, an estimated 5 gallons or less of Pamak (96% vegetable oil and 4% resin) leaked onto the ground when a Pamak pump developed a leak in the mechanical seal. That night the condensate

jammed and water overflowed onto the ground. The water flowed through the spilled Pamak carrying it onto Celanese's property and into Newark Bay. The Coast Guard was present when the run-off was discovered. The National Response Center, NJDEP, USEPA, Passaic Valley Sewage Commission and Ashland Chemical were notified immediately. Ashland Chemical was fined $150 for the discharge. In the initial cleanup, an absorbent material was used and in the final cleanup about one foot of dirt was removed and replaced with new fill.

3. On July 12, 1978, about 75 gallons of a resin was spilled when the packing on the pump failed. Approximately 5 to 10 gallons of the resin reached Newark Bay. The resin, comprised mostly of 27 parts of Soya Oil and three parts of modifier, is nontoxic. The Coast Guard, NJDEP and Ashland Chemical were notified immediately. No fine was levied by the Coast Guard. The spill was cleaned up immediately using containment booms and vacuum trucks.

4. On September 10, 1979, an unknown amount of resin spilled from an overflowing tank into the yard where it flowed toward the yard drain. Some of it entered the underground flume and was discharged into Newark Bay. When the facility operators discovered the discharge, they notified the Goast Guard, the Passaic Valley Sewage Commission and Spencer Kellogg. The yard drain was then plugged with rags to prevent

further entry and the spill in the yard was cleaned up and covered with Speedi Dri. The Coast Guard fined Spencer Kellogg $50 for the discharge. A spill contractor was hired to do further cleanup.

5. Since the mid-1950s when the facility first began to use liquid phthalic anhydride, a few spills have occurred in the unloading area due to leaks in the pump seals and gaskets. In each instance, the phthalic anhydride which rapidly crystalizes at room temperature was broken up with jack hammers and pick-axes and removed. In some instances the area was then covered with gravel or stone.

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
HAZARDOUS SITE MITIGATION ADMINISTRATION
CN 028, Trenton, N.J. 08625

MARWAN M. SADAT, P.E.
DIRECTOR

JORGE H. BERKOWITZ, PH.D.
ADMINISTRATOR

IN THE MATTER OF	:	ADMINISTRATIVE CONSENT
TEXTRON INC.	:	ORDER

The following FINDINGS are made and ORDER is issued pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "NJDEP") by N.J.S.A. 13:1D-1 et seq. and the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq., and duly delegated to the Assistant Director for Enforcement and Field Operations within the Division of Waste Management pursuant to N.J.S.A 13:1B-4.

FINDINGS

1. The Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq. ("ECRA" or "the Act"), was signed into New Jersey State Law by Governor Thomas H. Kean on September 2, 1983, and took effect on December 31, 1983.

2. ECRA required the NJDEP to adopt rules and regulations to implement the Act. On March 6, 1984, NJDEP adopted the Interim ECRA Regulations, N.J.A.C. 7:1-3 ("Regulations") in compliance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq., upon acceptance for filing by the Office of Administrative Law pursuant to N.J.A.C. 1:30-4.4(d).

3. ECRA requires that the owner or operator of an industrial establishment planning to sell or transfer operations (a) notify the NJDEP in writing within five days of the execution of an agreement of sale pursuant to N.J.A.C. 7:1-3.7, (b) submit within 60 days prior to transfer of title a Negative Declaration or Cleanup Plan to the NJDEP for approval, and (c) obtain, upon approval of any necessary Cleanup Plan by the NJDEP, a surety bond or other financial security approved by the NJDEP guaranteeing performance of the Cleanup Plan in an amount equal to the cost estimate for the approved Cleanup Plan.

4. N.J.S.A. 13:1K-13 provides that failure to submit a Negative Declaration or Cleanup Plan pursuant to ECRA is grounds for voiding the sale by NJDEP. Any person who knowingly gives or causes to be given any false information or who fails to comply with the provisions of ECRA is liable for a penalty of not more than $25,000.00 for each occurrence, and each day of a violation of a continuing nature constitutes an additional and separate offense. Furthermore, any officer or management official of an industrial establishment who knowingly directs or authorizes the violation of any provisions of the Act shall be personally liable for the $25,000.00 penalties for each violation described above.

5. Textron Inc. ("Textron"), a Delaware Corporation, owns and operates a specialty chemical and polyester resin manufacturing facility located at 400 Doremus Avenue, Newark, Essex County; said site being further known as Block 5070, Lots 9 and 11 on the tax map of the City of Newark ("Newark facility"). Textron has informed NJDEP that the Standard Industrial Classification ("SIC") number which best describes the operations at the Newark facility is 2821. Textron has further informed NJDEP that hazardous substances are used in the operations at the Newark facility. The Newark facility is an Industrial Establishment as defined by ECRA.

6. Textron has entered into a Purchase and Sale Agreement (the "Agreement") dated June 17, 1985, with NL Industries, Inc., a New Jersey Corporation ("NL"), pursuant to which NL will purchase substantially all of the assets of Textron's Spencer Kellogg Division (the "Division") as a going concern (the "Asset Purchase"). The Spencer Kellogg Division includes six (6) manufacturing operations, the Newark facility being the only one in New Jersey. The Agreement contemplates that the closing of the Asset Purchase will occur on July 31, 1985.

7. On June 21, 1985, Textron submitted to NJDEP the General Information Submission ("GIS") section of the Initial ECRA Notice for the Newark facility. NJDEP reviewed the GIS for the Newark facility and in a letter dated July 1, 1985 found it to be complete.

8. Due to both the procedural and substantive requirements of the Regulations, Textron has advised the NJDEP that it cannot comply with all of the requirements of ECRA and the Regulations prior to the closing of the Asset Purchase. The Newark facility is an integral part of the Spencer Kellogg Division, and, therefore, it is not possible to separate that facility from the Asset Purchase without seriously impeding the Division's business and operations. In addition, the business risks of delaying the closing until after compliance with the requirements of ECRA and the Regulations would jeopardize the entire transaction and significantly increase and prolong the uncertainties normally associated with a prospective change in ownership among the Division's 451 employees, 63 of which are employed at the Newark facility. Therefore, Textron has requested that NJDEP prepare an Administrative Consent Order which, when signed by all parties thereto, will allow the Asset Purchase to be consummated prior to Textron's completion of all administrative requirements under ECRA.

9. In appropriate cases, NJDEP may allow transactions subject to ECRA to proceed prior to completing the standard ECRA administrative process by execution of an Administrative Consent Order. The Administrative Consent Order specifies a time schedule for completion of ECRA requirements by the industrial establishment and provides for financial assurance in a form and amount acceptable to NJDEP prior to consummation of any transactions subject to ECRA. Failure to fully comply with all the terms and conditions of the Administrative Consent Order shall subject the Ordered Party to the full range of penalties and remedies prescribed in the Act, the Regulations, and the Administrative Consent Order.

ORDER

NOW, THEREFORE, IT IS ORDERED AND AGREED THAT:

10. ECRA Program Requirements

A. Textron shall submit the Site Evaluation Submission ("SES") section of the Initial Notice (commonly referred to as ECRA II) required by N.J.A.C. 7:1-3.7 within 30 days from the effective date of this Administrative Consent Order.

B. Within 90 days from receipt of NJDEP's written approval of the Sampling Plan prepared pursuant to N.J.A.C. 7:1-3.7(d)14 and N.J.A.C. 7:1-3.9, Textron shall initiate, complete, and submit to NJDEP the results from any NJDEP-approved Sampling Plan including, but not limited to, complete delineation of environmental contamination on-site, and any off-site environmental contamination resulting from discharges of hazardous wastes or substances on or from the Industrial Establishment. NJDEP and Textron recognize that additional sampling may be necessary during the various stages of the implementation of this Administrative Consent Order and ECRA, including during the implementation of a Cleanup Plan, at the subject Industrial Establishment to delineate fully the nature and extent of environmental contamination on-site, and any off-site environmental contamination resulting from discharges of hazardous substances or wastes on or from the subject Industrial Establishment. Therefore, Textron agrees to submit any additional sampling plans for NJDEP review and approval, as required by NJDEP in writing during the various stages of the implementation of this Administrative Consent Order and ECRA to further delineate the nature and extent of environmental contamination on or from the subject Industrial Establishment. NJDEP and Textron mutually agree that Textron shall submit any additional sampling plans required to NJDEP for review and approval within 30 days of the receipt of said written request. Within 90 days from receipt of NJDEP's written approval of any additional sampling plans, Textron shall initiate, complete and submit to NJDEP the results from any additional NJDEP-approved sampling plan required pursuant to this paragraph.

C. Textron shall submit a Negative Declaration or Cleanup Plan within 60 days of receipt of a written demand from NJDEP for a Negative Declaration or Cleanup Plan. If a Cleanup Plan is required, the Cleanup Plan shall address remediation of any contamination identified on or from the Industrial Establishment. Any Negative Declaration or Cleanup Plan submitted shall conform to N.J.A.C. 7:1-3.1 et seq. NJDEP shall notify Textron in writing requiring Textron to submit either a Negative Declaration or Cleanup Plan when sampling results have satisfied NJDEP's requirement to delineate fully the nature and extent of environmental contamination on or from the Industrial Establishment.

D. Textron shall implement any Cleanup Plan approved by NJDEP pursuant to the requirements of N.J.S.A. 13:1K-10(a) in accordance with the approved time schedule or defer implementation of all or part of the Cleanup Plan subject to NJDEP approval pursuant to N.J.A.C. 7:1-3.14.

E. Should NJDEP determine that any submittal made as part of the GIS or under this section is inadequate or incomplete, then NJDEP shall provide Textron with written notification of the deficiency(ies), and Textron shall revise and resubmit the required information within a reasonable period of time not to exceed thirty (30) days from receipt of such notification.

11. Financial Assurance

A. Textron shall obtain and provide to NJDEP financial assurance in the form of a surety bond or letter of credit in the amount of $100,000 prior to execution of this Administrative Consent Order. The financial assurance must conform with the requirements of N.J.S.A. 13:1K-9(b)3, N.J.A.C. 7:1-3.10, N.J.A.C. 7:1-3.13, and this Administrative Consent Order.

B. Textron shall establish a standby trust fund within seven days from the effective date of this Administrative Consent Order. The financial institution which issues the financial assurance shall agree to promptly and directly deposit all amounts up to the total value of the financial assurance into the standby trust fund upon written demand by NJDEP.

C. Upon NJDEP written approval of a Cleanup Plan, Textron shall amend the amount of the financial assurance to equal the estimated cost of implementation of the approved Cleanup Plan, or shall provide such other financial assurance as may be approved by NJDEP in an amount equal to the estimated cost of implementation of the approved Cleanup Plan.

D. In the event that NJDEP determines that Textron has failed to perform any of its obligations under this Administrative Consent Order, NJDEP may draw on the financial assurance in the amount necessary for NJDEP to pay for the accomplishment of any cleanup and any other costs associated with NJDEP's implementation of Textron's cleanup obligations pursuant to ECRA and this Administrative Consent Order; provided, however, that before any such written demand is made, NJDEP shall notify Textron in writing of the obligation(s) with which it has not complied, and Textron shall have reasonable time, not to exceed fourteen (14) calendar days, to perform such obligation(s) to NJDEP's satisfaction. Nothing in this paragraph shall prevent NJDEP from collecting stipulated penalties pursuant to paragraph 12 E of this Administrative Consent Order for cause.

E. Upon NJDEP's written approval of a Negative Declaration, Textron shall be relieved of any further obligation to maintain in full force and effect the financial assurance required by this Administrative Consent Order for the facility which is the subject of the NJDEP-approved Negative Declaration. Upon NJDEP's written approval of the completion of any cleanup required by this Administrative Consent Order, as verified by final site inspection pursuant to N.J.A.C. 7:1-3.12(e) and upon Textron's satisfaction of all financial obligations in connection therewith, Textron shall be relieved of any further obligation to maintain in full force and effect the financial assurance required by this Administrative Consent Order for the facility at which the approved cleanup has been completed.

12. Additional Conditions of Consent

A. Textron and NL shall allow the NJDEP access to the subject Industrial Establishment for the purpose of undertaking all necessary monitoring and environmental cleanup activities required pursuant to ECRA, the Regulations and this Administrative Consent Order. Prior to entry into this Administrative Consent Order, Textron shall provide NJDEP with appropriate documentation that NL shall allow the NJDEP access required herein.

B. Compliance with the terms of this Administrative Consent Order shall not excuse Textron from obtaining and complying with any applicable federal, state or local permits, statutes, regulations and/or orders while carrying out the obligations imposed by ECRA through this Administrative Consent Order. The execution of this Administrative Consent Order shall not excuse Textron from compliance with all other applicable environmental permits, statutes, regulations and/or orders and shall not preclude NJDEP from requiring that Textron obtain and comply with any permits, and/or orders issued by NJDEP under the authority of the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., the Solid Waste Management Act, N.J.S.A. 13:1E-1 et seq., and the Spill Compensation and Control Act ("Spill Act") N.J.S.A. 58:10-23.11 et seq., for the matters covered herein. The terms and conditions of any such permit shall not be pre-empted by the terms and conditions of this Administrative Consent Order if the terms and conditions of any such permit are more stringent than the terms and conditions of this Administrative Consent Order. Should any of the measures to be taken by Textron during the remediation of any ground water and surface water pollution result in a new or modified discharge as defined in the NJPDES regulations, N.J.A.C. 7:14A-1 et seq., then Textron shall obtain a NJPDES permit or permit modification from NJDEP prior to commencement of said activity.

C. NJDEP agrees that it will not bring any action, nor will it recommend that the Attorney General's Office bring any action for Textron's failure to comply with (a) the time requirements in N.J.S.A. 13:1K-9(b)1 that NJDEP be notified within five (5) days of execution of an agreement of sale or option to purchase and (b) the time requirement in N.J.S.A. 13:1K-9(b)2 that a Negative Declaration or Cleanup Plan be submitted 60 days prior to transfer of title. NJDEP also agrees that it will not bring any action, nor will it recommend that the Attorney General bring any action seeking monetary penalties for Textron's failure to meet the time requirements specified in (a) and (b) of this paragraph.

D. No obligations imposed by this Administrative Consent Order (other than paragraph "E" below) are intended to constitute a debt, claim, penalty or other civil action which could be limited or discharged in a bankruptcy proceeding. All obligations imposed by this Administrative Consent Order shall constitute continuing regulatory obligations imposed pursuant to the police power of the State of New Jersey, intended to protect the public health, safety and welfare.

E. In the event that Textron fails to comply with any of the provisions of this Administrative Consent Order, Textron shall pay to NJDEP stipulated penalties in the amount of $5,000.00 for each day on which Textron fails to comply with any obligation under this Administrative Consent Order provided, however, that no such stipulated penalty shall be payable by Textron with respect to such period that said failure to comply results from Force Majeure.

F. The provisions of this Administrative Consent Order shall be binding upon Textron and its officers, management officials, employees, agents, successors in interest, assigns, tenants, and any trustee in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

G. Textron's failure to submit an approvable Negative Declaration or Cleanup Plan shall constitute grounds for the NJDEP to void the subject sale or transfer of the Newark facility. NJDEP's right to void the subject sale or transfer shall terminate upon NJDEP's written approval of an appropriate Negative Declaration or Cleanup Plan submitted by Textron pursuant to this Administrative Consent Order and ECRA.

H. Any submission to be made to NJDEP in accordance with this Administrative Consent Order shall be directed to:

Anthony J. McMahon, Chief
Bureau of Industrial Site Evaluation
Division of Waste Management
CN028
Trenton, NJ 08625

13. Force Majeure

If any event occurs which purportedly causes or may cause delays in the achievement of any deadline contained in this Administrative Consent Order, Textron shall notify NJDEP in writing within ten (10) days of the delay or anticipated delay, as appropriate, referencing this paragraph and describing the anticipated length, precise cause or causes, measures taken or to be taken and the time required to minimize the delay. Textron shall adopt all necessary measures to prevent or minimize any delay. If any delay or anticipated delay had been or will be caused by fire, flood, riot, strike or other circumstances alleged to be beyond the control of Textron, then the time for performance hereunder may be extended by NJDEP for a period no longer than the delay resulting from such circumstances, provided that NJDEP may grant additional extensions for good cause. If the events causing such delay are not found by NJDEP to be beyond the control of Textron, failure to comply with the provisions of the Administrative Consent Order shall constitute a breach of the Administrative Consent Order's requirements. The burden of proving that any delay is caused by circumstances beyond Textron control and the length of such delay attributable to those circumstances shall rest with Textron. Increases in the costs or expenses incurred in fulfilling the requirements contained herein shall not be a basis for an extension of time. Similarly, delay in completing an interim requirement shall not automatically justify or excuse delay in the attainment of subsequent requirements.

14. Reservation of Rights

This Administrative Consent Order shall be fully enforceable in the New Jersey Superior Court having jurisdiction over the subject matter and signatory parties upon the filing of a summary action for compliance pursuant to the Environmental Cleanup Responsibility Act, N.J.S.A. 13:1K-6 et seq. This Administrative Consent Order may be enforced in the same manner as an Administrative Order issued by NJDEP pursuant to other statutory authority and shall not preclude NJDEP from taking whatever action it deems appropriate to enforce the environmental protection laws of the State of New Jersey in any manner not inconsistent with the terms of this Administrative Consent Order. It is expressly recognized by NJDEP and Textron that nothing in this Administrative Consent Order shall be construed as a waiver by NJDEP of its rights with respect to enforcement of ECRA on bases other than those set forth in Sections 10 and 12 of this Administrative Consent Order or by Textron of its right to seek review of any enforcement action as provided by the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq. Furthermore, nothing in this Administrative Consent Order shall constitute a waiver of any statutory right of NJDEP to require Textron to implement additional remedial measures should NJDEP determine that such measures are necessary to protect the public health, safety and welfare.

15. NJDEP and Textron have entered into this Administrative Consent Order in good faith to ensure ECRA compliance and to allow the proposed Asset Purchase to be completed as quickly as possible. Textron has executed this Administrative Consent Order without trial or adjudication of any issue of fact or law. Accordingly, neither Textron's execution of this Administrative Consent Order, nor its compliance with any of the provisions herein, shall be deemed or construed to be an admission of liability at any time or for any purpose other than Textron's liability to comply with the terms and conditions of ECRA as set forth in this Administrative Consent Order.

16. Textron hereby consents to entry of this Administrative Consent Order and waives its right to a hearing concerning the terms hereof pursuant to N.J.S.A. 52:14B-1 et seq.

17. This Administrative Consent Order shall take effect upon the signature of all parties. Upon the signature of all parties, Textron may complete the sale or transfer of the Newark facility subject to the Administrative Consent Order.

NEW JERSEY DEPARTMENT OF
ENVIRONMENTAL PROTECTION

Date: 7/25/85

By: Joseph Rogalski
Joseph Rogalski, Assistant
Director for Enforcement &
Field Operations

842540159

TEXTRON INC.

Date: 7/24/85

By: G H Hartmann

Name: George H. Hartmann
Title: Group Vice President

Fleet National Bank

INTERNATIONAL DIVISION
P.O. BOX 516, Providence, R.I. 02901
(401) 278-5740

SWIFT FLTBUS3P
CABLE ADDRESS
FLEETBANK
TELEX ITT 4435019

ISSUE DATE JULY 23, 1985
IRREVOCABLE LETTER OF CREDIT
NUMBER S85-5181

BENEFICIARY:
DIVISION OF WASTE MANAGEMENT, NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
428 EAST STATE STREET
TRENTON, NEW JERSEY 08608
ATTN: THOMAS KEARNS, ASST. CHIEF, BUREAU OF
INDUSTRIAL SITE EVALUATION

DEAR SIRS:

WE HEREBY ESTABLISH OUR IRREVOCABLE STANDBY LETTER OF CREDIT NO. S85-5181, IN YOUR FAVOR, AT THE REQUEST AND FOR THE ACCOUNT OF TEXTRON INC., 40 WESTMINSTER STREET, PROVIDENCE, RHODE ISLAND 02903, UP TO THE AGGREGATE AMOUNT OF ONE HUNDRED THOUSAND AND 00/100 USDOLLARS (USD100,000.00), AVAILABLE UPON PRESENTATION BY YOU OF (1) YOUR SIGHT DRAFT, BEARING REFERENCE TO THIS IRREVOCABLE STANDBY LETTER OF CREDIT NO. S85-5181, AND (2) YOUR SIGNED STATEMENT READING AS FOLLOWS:
"I HEREBY CERTIFY THAT THE AMOUNT OF THE DRAFT IS PAYABLE PURSUANT TO THE AUTHORITY OF THE ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT, N.J.S.A. 13:1K-6 ET SEQ. (P.L. 1983, C.330) ("ECRA") AND THE INTERIM ECRA REGULATIONS, N.J.A.C. 7:1-3."

THIS LETTER OF CREDIT IS EFFECTIVE AS OF JULY 23, 1985 AND SHALL EXPIRE ON JULY 22, 1986 UNLESS EARLIER TERMINATED IN ACCORDANCE WITH THE TERMS OF THIS CREDIT, WE SHALL DULY HONOR SUCH DRAFT UPON PRESENTATION TO US, AND WE SHALL DEPOSIT THE AMOUNT OF THE DRAFT DIRECTED INTO THE STANDBY TRUST FUND OF TEXTRON, INC. OR ITS SUCCESSORS IN ACCORDANCE WITH YOUR INSTRUCTIONS.

THIS LETTER OF CREDIT IS IRREVOCABLE AND ISSUED FOR A PERIOD OF AT LEAST ONE (1) YEAR. THIS LETTER OF CREDIT WILL BE AUTOMATICALLY EXTENDED FOR A PERIOD OF AT LEAST ONE (1) YEAR UNLESS, AT LEAST NINETY (90) DAYS BEFORE THE CURRENT EXPIRATION DATE, WE NOTIFY BOTH THE NJDEP AND TEXTRON INC. BY CERTIFIED MAIL THAT WE HAVE DECIDED NOT TO EXTEND THIS LETTER OF CREDIT BEYOND THE CURRENT EXPIRATION DATE. THE 90-DAY PERIOD WILL BEGIN ON THE DATE OF RECEIPT BY NJDEP AS SHOWN ON THE SIGNED RETURN RECEIPT.

(CONTINUED)

842540160

Fleet National Bank

INTERNATIONAL DIVISION
P.O. BOX 516, Providence, R.I. 02901
(401) 278-5740

SWIFT FLTBUS3P
CABLE ADDRESS
FLEETBANK
TELEX ITT 4435019

WITHOUT RESPONSIBILITY ON OUR PART, TEXTRON INC. HAS ADVISED US THAT WHENEVER THE CLEANUP PLAN COST ESTIMATE INCREASES TO AN AMOUNT GREATER THAN THE AMOUNT OF CREDIT, TEXTRON INC. SHALL WITHIN 60 DAYS OF THE INCREASE, CAUSE THE AMOUNT OF THE CREDIT TO BE INCREASED TO AN AMOUNT AT LEAST EQUAL TO THE NEW ESTIMATE OR OBTAIN OTHER FINANCIAL ASSURANCE AS SPECIFIED IN N.J.A.C. 7:1-3.13 TO COVER THE INCREASE. WHENEVER THE ADJUSTED CLEANUP COST ESTIMATE DECREASES DURING THE IMPLEMENTATION OF THE APPROVED CLEANUP PLAN AT THE INDUSTRIAL ESTABLISHMENT, THE LETTER OF CREDIT MAY BE REDUCED TO THE AMOUNT OF THE NEW ESTIMATE FOLLOWING WRITTEN APPROVAL BY NJDEP. NOTICE OF AN INCREASE OR DECREASE IN THE AMOUNT OF THE CREDIT SHALL BE SENT TO THE NJDEP BY CERTIFIED MAIL WITHIN 60 DAYS OF THE CHANGE.

THIS LETTER OF CREDIT IS SUBJECT TO THE UNIFORM CUSTOMS AND PRACTICE FOR DOCUMENTARY CREDITS (1983 REVISION) INTERNATIONAL CHAMBER OF COMMERCE PUBLICATION NO. 400.

VERY TRULY YOURS,

Barbara A. Lattiente
AUTHORIZED SIGNATURE

AUTHORIZED SIGNATURE

RL/ZD

842540161

842540162

STATE OF NEW JERSE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WASTE MANAGEMENT
HAZARDOUS SITE MITIGATION ADMINISTRATION
BUREAU OF INDUSTRIAL SITE EVALUATION

ENVIRONMENTAL CLEANUP RESPONSIBILITY ACT
INITIAL NOTICE
GENERAL INFORMATION SUBMISSION

(This is the first part of a two-part application form. This information must be submitted within 5 days following public release of a decision to close operations or the signing of a sales agreement or option to purchase involving an Industrial Establishment as defined in N.J.S.A. 13:1K-6, the Environmental Cleanup Responsibility Act.)

Please refer to N.J.A.C. 7:1-3.7 et seq. before filling out this form. Answer all questions. Please print or type.

Date June 21, 1985

1. A. Industrial Establishment

Name Spencer Kellogg Division of Textron Inc. Newark Resin Plant Telephone No. (201) 589-3709

Street Address 400 Doremus Avenue

City or Town Newark State NJ Zip Code 07105

Municipality _____ County Essex

B. Lot number 9 and 11 Block number 5070

C. Standard Industrial Classification (SIC) Number 2821

D. Current Owner

Name Textron Inc. Telephone No. (401) 421-2800

Street Address 40 Westminster Street

Municipality Providence State RI Zip Code 02903

E. If the industrial establishment discharges to a publicly-owned treatment plant, provide the name and address of that facility.

Name Passaic Valley Sewerage Commissioners Telephone No. (201) 344-1800

Street Address 600 Wilson Avenue

Municipality Newark State NJ Zip Code 07105

FOR DEP use only
Date Received _____
Notice Number _____

ECRA-1 5/84

842540163

F. Has an ECRA application been filed for this Industrial Establishment or loca previously? No If so, when? _____ For what reason? _____

Final Disposition? _____

G. How is this Industrial Establishment heated?(gas,oil,electricity) gas and oi

2. Previous owner(s) and current address (es)(attach additional sheets if necessary)

Name	Current Address	Description of the Operation
Ashland Oil Company (1968-1978)	P.O. Box 391 Ashland, KY 41160	Manufacture of spec chemical products a polyester resins
Archer-Daniels-Midland Co. (1954-1968)	4666 Faries Parkway Box 1470, Decatur — 62525	Manufacture of spec chemical products a alkyd resins
U.S. Industrial Chemicals Co. (up to 1954)	11500 North Lake Drive Cincinnati, OH 45240	Manufacture of spec chemical products a ethyl alcohol

3. If the transaction initiating an ECRA review is the closure of operations, full date of public release of the decision to close the facility and enclose a copy public announcement. Not applicable.

Date of the public release of the decision _____

Is the public release enclosed? _____ Yes _____ No

If you checked "no", state the reason(s) _____

4. If the transaction initiating an ECRA review is an agreement of sale or option to purchase, fill in the date of the execution of that instrument plus provide a copy of the document June 17, 1985

Name and address of the other parties to the transfer:

Name	Street Address and Municipality	Phone No.
NL Industries, Inc.	1230 Avenue of the Americas New York, NY 10020	(212) 621-9400

Is a copy of the agreement of sale or option to purchase attached? x Yes _____

If you checked "no", state the reason(s) _____

5. Actual date proposed for closure of operations or transfer of title July 31, 1985

6. Authorized agent designated to work with the Department.

Name Frederick K. Butler, Group Counsel and Assistant Secretary

Street Address Textron Inc., 40 Westminster Street

Municipality Providence State RI Zip Code 02903

Telephone No. (401) 421-2800 (Ext. 202)

7. List all federal and state environmental permits applied for and received at this facility (attach additional sheets if necessary).

_____ Check here if no permits are involved.

842540165

A. New Jersey Bureau of Air Pollution Control. See attached Schedule 7A.

Permit Number	Date of Approval or Denial	Reason for Denial (if applicable)	Expirat Dat

B. New Jersey Pollutant Discharge Elimination System None.

Number	Discharge Activity	Date Issued or Denied	Expiration Date	Body of Wat Discharged I

C. United States Environmental Protection Agency(EPA) Identification Number.

NJD092217892

D. All other federal, state, local environmental permits.

Agency Issuing Permit	Permit Number	Date of Approval or Denial	Expira Dat
Passaic Valley Sewerage Commissioners	-----	5-29-81	5-29-

8. If applicable, identify all administrative orders, temporary or permanent injunctions, civil administrative penalties, civil penalties, or criminal actions concering the environment issued against the facility during the last ten years.

_____ Check here if no enforcement actions are involved

A. Date of Action 10/11/77

Section of Law or Statute violated 33 USC-1321

Type of Enforcement Action Civil penalty

Description of the violation Discharge of oil (less than 5 gallons) into Passaic River by Ashland Oil, Inc.

How was the violation resolved?

Fine of $150 was paid by Ashland Oil, Inc. on October 25, 1977.

B. Date of Action 2/13/79

Section of Law or Statute violated 33 USC-1321

Type of Enforcement Action Civil penalty

Description of the violation Alleged discharge of oil by Ashland Oil, Inc. i Newark Bay.

How was the violation resolved? Dismissed due to insufficient evidence to substantiate a claim.

(Add additional pages, if necessary) See attached Schedule 8.

Send this completed form to:

N.J. Department of Environmental Protection
Division of Waste Management
Bureau of Industrial Site Evaluation
CN 028
Trenton, New Jersey 08625

Attn: ECRA Initial Notice

Schedule 7A

INITIAL NOTICE - GENERAL INFORMATION SUBMISSION (page 7 of 8)

New Jersey Bureau of Air Pollution Control

Permit Number	Date of Approval or Denial	Reason for Denial	Expiration Date
578	1-28-75	Expired-Not In Use	12-1-83
18080	9-24-76	———	9-23-86
18081	1-27-75	———	9-23-86
18082	1-27-75	———	9-23-86
18083	1-27-75	———	9-23-86
18084	1-27-75	———	9-23-86
18085	1-27-75	———	9-23-86
18086	1-27-75	———	9-23-86
18087	1-27-75	———	9-23-86
18957	3-31-75	———	9-23-86
19050	4-14-75	———	9-23-86
41057	11-29-78	———	11-20-88
40251	8-15-78	———	8-15-88
40194	9-12-79	———	9-10-89
037407	1-21-78	———	4-21-88
037409	1-21-78	———	4-21-88
037410	1-21-78	———	4-21-88
037411	4-21-78	———	4-21-88
037412	4-21-78	———	4-21-88
037413	4-20-78	———	4-21-88
037414	4-21-78	———	4-21-88
037415	4-21-78	———	4-21-88
037416	4-21-78	———	4-21-88
8789	———	Not in use	12/78
065769	8-1-83	———	8-1-88
065770	8-1-83	———	8-1-88
065771	8-1-83	———	8-1-88
065772	8-1-83	———	8-1-88
065773	8-1-83	———	8-1-88
065774	8-1-83	———	8-1-88
067362	1-30-84	———	1-30-89
067363	1-30-84	———	1-30-89
068606	12-9-82	Temporary	8-24-85

842540169

Schedule 8

INITIAL NOTICE-GENERAL INFORMATION SUBMISSION (page 8 of 8)

Item 8 (continued)

_____Check here if no enforcement actions are involved

C. Date of Action 2/25/80

Section of Law or Statute violated FWPCA Sec. 1321(b)(3)

Type of Enforcement Action civil penalty

Description of the violation Discharge of 5 gallons of oil into Newark Bay

How was the violation resolved?

Fine of $50 was paid June 18, 1980.

D. Date of Action 8/27/81

Section of Law or Statute violated N.J. A.C. 7:27-16.6(f)1

Type of Enforcement Action Order for compliance

Description of the violation Failure to submit a plan to achieve compliance fo

Source Operations relating to Volatile Organic Substances.

How was the violation resolved? Plan submitted as required and approval

form, permit and certificate received December 9, 1982.

842540170

N

842540171

CLEANUP PLAN
FOR SPENCER KELLOGG FACILITY
FORMERLY A DIVISION OF TEXTRON INC.
400 DOREMUS AVENUE
NEWARK, ESSEX COUNTY, NEW JERSEY

ECRA Case No. 85403

Prepared for

Textron Inc.
Providence, Rhode Island 02903

Prepared by

ENVIRON Corporation
Princeton, New Jersey 08540

January 1990

Spencer Kellogg Facility, Newark, New Jersey

ECRA Case No. 85403

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L I S T O F P L A T E S

Spencer Kellogg Facility, Newark, New Jersey

ECRA Case No. 85403

I. INTRODUCTION

A. Purpose and Scope

On July 25, 1985, Textron Inc. (Textron) signed an Administrative Consent Order under the New Jersey Environmental Cleanup Responsibility Act (ECRA) which allowed Textron to sell its Spencer Kellogg resin manufacturing facility (the Spencer Kellogg facility or the site) to NL Industries, Inc. To assist Textron in complying with ECRA, ENVIRON received the New Jersey Department of Environmental Protection's (NJDEP) approval of a Phase I Sampling Plan and implemented that plan from November 1986 to March 1987. ENVIRON submitted the results to NJDEP in March 1987 in a report entitled "Presentation of the ECRA Sampling Plan Results." In April 1987, ENVIRON performed additional field work and presented the results to NJDEP in June 1987 in a report entitled "Presentation of the Interim Investigation Results."

Results of the Phase I Sampling Plan indicated the presence of soil and ground water contamination[1] at the Spencer Kellogg facility. ENVIRON implemented the NJDEP-approved Phase II Sampling Plan during November and December 1987 to define more fully the nature and areal

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1 For this report, "contamination" is defined as concentrations of a particular substance exceeding informal NJDEP-established ECRA action levels for soil or ground water (Appendix A). ENVIRON is using these action levels to simplify the presentation and interpretation of sampling results. Neither ENVIRON nor Textron suggests, however, that the informal ECRA action levels provide an appropriate basis for determining the need for and/or scope of site cleanup.

extent of both soil and ground water contamination in certain areas of the site, to characterize ground water flow patterns, and to clarify other issues that were not resolved during the first phase of sampling. ENVIRON provided the results to NJDEP in June 1988 in a report entitled "Presentation of the Phase II ECRA Sampling Plan Results and Remediation Strategy/Part I Cleanup Plan."

In this report, ENVIRON provides a brief summary of the analytical results and proposed remediation strategies set forth in earlier reports, discusses the evaluation of feasible remedial alternatives and the results of feasibility testing for in situ bioremediation, and presents the proposed Cleanup Plan.

The Cleanup Plan consists of a conceptual design for cleanup of contaminated soils using in situ bioremediation and a discussion of additional tasks that must be completed prior to developing final remedial designs. Final designs will be developed after NJDEP approval of the proposed Cleanup Plan, completion of proposed additional laboratory and field studies, and agreement between NJDEP and Textron that in situ bioremediation will effectively treat VOCs and TPHCs. Specifically, the Cleanup Plan consists of the following components:

- Discussion of the overall cleanup objectives;
- Preferred cleanup actions for contaminated soils;
- Alternative site cleanup actions;
- Proposed additional laboratory and field testing;
- A preliminary schedule to implement the Cleanup Plan; and
- Preliminary estimated costs for the proposed cleanup actions.

As required by ECRA, a schedule and cost estimate have been developed for the proposed Cleanup Plan. The schedule provides a preliminary estimate of the timing for implementing cleanup and is based on the scope of activities planned for the next phase of work and the time required to develop final remedial designs and receive agency approval. A more detailed schedule for full-scale implementation of cleanup can be developed after completion of the proposed additional laboratory and field testing and will be presented to NJDEP as part of the final remedial design work plan. The estimated costs are based on discussions with vendors, unit costs from published literature on the proposed cleanup actions, and ENVIRON's experience. If necessary, the cost estimate will be modified as the remedial designs are finalized.

B. Site Description

The Spencer Kellogg facility is situated on the west bank of Newark Bay. The site, approximately 10 acres, is directly across from Kearny Point--which marks the confluence of the Passaic and Hackensack Rivers, which join to form Newark Bay. Originally marshland, the site was filled in by the early 1900s and has since been subject to industrial activity.

Plate 1 depicts the main features of the site. A breakwall consisting of concrete-covered rip rap is located along the eastern property edge adjacent to Newark Bay. West of the property is a landfill which drains into Plum Creek. Upon leaving the landfill, Plum Creek enters an underground conduit or flume, through which it flows under Doremus Avenue and beneath the site. This flume discharges from a pipe in the breakwall directly into Newark Bay.

According to plant personnel, the site has been used as a manufacturing facility since the first or second decade of this century. Before that time, the site housed an alcohol distillery. Resins and resin-related products have been manufactured on-site from the early 1930s to the present. For the past several decades, the facility has manufactured coating resins used primarily in the paint industry. The site has been almost entirely paved for the last few decades.

C. Summary of Previous Sampling Activities, Environmental Concerns and Recommended Actions

Based on a series of initial site visits and a review of past and present operations, 27 areas of environmental concern (AECs) were identified. The rationale for selection of each AEC is provided in Table 1, and the locations are illustrated on Plate 1. To evaluate the effect of past site activities on the quality of soil and ground water and to determine the geologic and hydrogeologic characteristics of the site, ENVIRON completed 46 soil borings and installed 11 shallow and 3 deep monitoring wells during execution of the Phase I Sampling Plan, primarily within the aforementioned AECs. Soil, surface water and ground water samples were collected and analyzed for those chemicals that may be present due to industrial activities within the AECs.

The Phase I Sampling Plan results indicated that the primary soil contaminants at the site are total petroleum hydrocarbons (TPHCs) and volatile organic compounds (VOCs), particularly ethylbenzene and toluene. Base/neutral organic compounds (BNs), priority pollutant metals

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TABLE 1: Areas of Environmental Concern

Area of Environmental Concern[1]	Rationale for Selection
1	Area of apparent resin spill onto cracked pavement.
2	Area of possible discharge onto unpaved region from dumpster and compactor which receive waste from Buildings 31 and 32.
3	Area of potential spill of finished products (resins) during railroad car loading.
4	Area of possible discharge of vegetable oils and fish oils during railroad car unloading.
5	Area of possible discharge of phthalic anhydride during railroad car unloading.
6	Underground fuel oil tank.
7	Site of solvent tank truck unloading prior to and subsequent to area being paved.
8	"Underground" fuel oil tanks.[2]
9	Limited area of potential contamination beneath building on stilts possibly caused by a discharge of raw materials and finished products from the polyester resin manufacturing process through a hole in the building's floor.

1 The locations of the Areas of Environmental Concern (AECs) are depicted on Plate 1. The AECs are numbered 1 through 23 and 25 through 28. There is no AEC 24 because the area initially designated as AEC 24 has been combined with AEC 1.

2 These tanks appear to be mostly above ground level, but are covered with earth.

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TABLE 1: Areas of Environmental Concern (continued)

Area of Environmental Concern[1]	Rationale for Selection
10	Site of finished product and raw materials storage while area was unpaved.
11	Former aboveground storage tank located in unpaved area.
12	Building on stilts with potential for spills or discharges beneath.
13	Site of former aboveground storage tanks while area was unpaved.
14	Site of former aboveground storage tanks while area was unpaved.
15	Site of former drum storage while area was unpaved.
16	Site of former drum storage while area was unpaved.
17	Site of former drum storage while area was unpaved.
18	Site of fuel oil unloading in unpaved area with evidence of spills.

[1] The locations of the Areas of Environmental Concern (AECs) are depicted on Plate 1. The AECs are numbered 1 through 23 and 25 through 28. There is no AEC 24 because the area initially designated as AEC 24 has been combined with AEC 1.

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TABLE 1: Areas of Environmental Concern (continued)

Area of Environmental Concern[1]	Rationale for Selection
19	Tank previously used for solvent sludge storage. Area within dike unpaved.
20	Location of former underground gasoline tank.
21	Site of former aboveground tank farm while area was unpaved.
22	Concrete pad on which 1285 Premix has been stored in drums.
23	Tank wagon loading area for Building 4 where 1285 Premix may be generated.
25	Tank wagon loading area for Building 26 where 1285 Premix may be generated.
26	Drains in large tank farm which may have discharged to the ground in past. Drains are now plugged.
27	Drum storage area on unpaved ground (observed during April 9, 1986, NJDEP site inspection).
28	Area around the break in the pipe which carries runoff from the northern railroad siding (observed during April 9, 1986, NJDEP site inspection).

[1] The locations of the Areas of Environmental Concern (AECs) are depicted on Plate 1. The AECs are numbered 1 through 23 and 25 through 28. There is no AEC 24 because the area initially designated as AEC 24 has been combined with AEC 1.

(PPMs) and other VOCs, such as benzene, methylene chloride and chloroform, were detected in only a few soil samples.

The primary ground water contaminants detected at the site during Phase I sampling were ethylbenzene and toluene. PPMs were detected above informal ECRA action levels in two of the five wells tested for metals. TPHCs, benzene and cyanide were each detected in only one ground water sample. Trace levels of VOCs were observed in one deep monitoring well. No other constituents of concern were detected at concentrations above informal ECRA action levels in ground water or soil samples collected during the Phase I sampling program.

To close the data gaps from the Phase I Sampling Plan and to provide a more comprehensive data base required for determining the need for and possible nature and extent of soil and ground water remediation, ENVIRON collected 42 additional soil samples and installed 11 additional shallow and deep monitoring wells during execution of the Phase II Sampling Plan. The primary objectives of the Phase II Sampling Plan were to: (1) delineate the extent of ground water contamination; (2) identify the oils that contribute to the TPHC contamination in each AEC; and (3) define further the nature and pattern of metal contamination.

The results of the Phase II Sampling Plan indicated the presence of PPMs over broad areas of the site and confirmed that a significant quantity of TPHCs detected previously are non-hazardous fish and vegetable oils. The data also indicated that petroleum-based hydrocarbons, such as fuel oils, lubricating oils and gasoline, remain within most of the tested AECs.

Phase II ground water quality data were similar to those obtained during Phase I ground water sampling. VOCs were present in localized areas of the site but were not detected in Phase II wells installed in downgradient areas. In addition, only two dissolved PPMs were detected and TPHCs were present only in the two background wells. No significant levels of contaminants were detected in the deep aquifer.

The results of both sampling programs indicated that several classes of constituents are present in soil and ground water at concentrations exceeding informal ECRA action levels. The results were also adequate to define the lateral and vertical extent of this contamination and to develop remedial strategies. Detailed discussions of all sampling activities, analytical results and proposed remedial strategies have been provided previously to NJDEP and are contained within the reports referenced in Section I.A. Provided below is a brief summary of: (1) the findings in terms of the probable source(s) of contamination; (2) recommended remedial strategies set forth to NJDEP in ENVIRON's June 1988 report entitled "Presentation of the Phase II ECRA Sampling Plan Results and Remediation Strategies/Part I Cleanup Plan;" and (3) NJDEP's response, where appropriate, to the recommended actions as outlined in the agency's January 30, 1989 letter to Textron (Appendix B).

1. Soil Contamination Related to On-Site Industrial Activities

VOCs, particularly ethylbenzene and toluene, appear to have been introduced into the soils of the fill unit in certain areas of the site by historical industrial operations and activities at the

facility. The occurrence and relative concentrations of these compounds are generally consistent with known and possible uses within certain AECs. The distribution and concentrations of total VOCs are provided on Plate 2.

Ethylbenzene and toluene are known to have been used at this facility. These two compounds were detected only in areas in which it was suspected that they might be found due to past practices at the site. Also, ethylbenzene and toluene have been detected in the shallow ground water in localized areas of the site, although the levels of these constituents typically have been within the parts per billion (ppb) range. These results suggest that the shallow ground water has been minimally affected by soils containing VOCs.

TPHCs are also present in the fill unit over broad areas of the site. Like VOCs, the past use and handling of raw materials, products and wastes appear to have contributed to the levels of TPHCs found in soil. Results of hydrocarbon "fingerprinting" analyses performed as part of the Phase II Sampling Plan indicated, however, that a significant portion of the TPHCs are non-hazardous fish and vegetable oils. The data also indicated that petroleum-based hydrocarbons in excess of the informal ECRA action level still remain within several on-site areas. The petroleum hydrocarbon fractions were qualitatively identified by their GC/FID characteristics as paint thinner, fuel oils, lubricating oils, gasoline, kerosene, coal tar, and polycyclic aromatic hydrocarbons (PAHs). The non-petroleum-based fractions typically were identified

as either soybean oil or linseed oil. The results of these analyses are provided on Plate 3. In many instances, the types of oil identified were similar to those used on site. In other cases, there was no correlation between known site activities and the observed contamination, suggesting that petroleum hydrocarbons may be present in fill used on-site.

Total BNs or PAHs were detected at concentrations exceeding the informal ECRA action levels only in a few soil samples. The concentration of each of the individual compounds was relatively low. The source of these constituents at some sampling locations may be related to the presence of TPHCs, although the occurrence of total BNs or PAHs in other areas, where no apparent source exists, suggests that they may also be associated with the fill material.

As discussed in the June 1988 report, a number of factors were considered in determining the need for remediating these constituents, including the nature and probable source(s) of contamination, impact to ground water, and surrounding ambient conditions. The results of this analysis suggested that the continued operation of the facility with the existing levels of constituents in soil does not threaten public health or the environment and, therefore, that extensive remediation of the site is not warranted. However, because VOCs have reached the site's ground water and because VOCs in the soil largely resulted from past

site operations, Textron proposed to evaluate the use of in situ bioremediation to reduce the concentrations of VOCs in the unsaturated soil.

Despite the presence of TPHCs in soils, Textron did not recommended remediation of these compounds in the June 1988 report. This recommendation was largely based on the observations that TPHCs were not leaching from the fill material into the shallow ground water and that a significant portion of these compounds were non-hazardous fish and vegetables oils. Although concentrations of TPHCs in excess of the informal ECRA action level were detected in both background wells, their presence is related to off-site sources. These background wells are located in areas unaffected by past site activities and are immediately adjacent to upgradient industrial establishments known to use or handle petroleum products. As with TPHCs, Textron did not propose remediation of BNs or PAHs because shallow ground water had not been impacted and the presence of some of these compounds is likely related to fill material. Textron stated, however, that in situ bioremediation for VOCs would likely be effective in reducing the concentrations of TPHCs, BNs and PAHs.

In NJDEP's January 30, 1989 response letter to Textron's proposed remedial strategies, the agency approved the proposed in situ bioremediation feasibility study for reducing VOC contamination but indicated that this work should specifically include the treatment of TPHC contamination (in addition to VOCs), and not

consider it only as a secondary benefit. NJDEP did not take exception to the conclusion reached for BNs and PAHs. In accordance with the agency's request, the treatment of TPHCs was evaluated as part of the feasibility study. The results of this work are provided in Section II.

2. Soil Contamination Related to On-Site Fill Materials

Several species of metals were found at background locations and from within the central and eastern portions of the site. However, their presence is believed to be associated with on-site fill materials rather than past industrial activities because none of the metals detected is known to have been used during the operating history of the site. In addition, the variability of metal concentrations and noted increases of metal concentrations with depth at several sampling locations are indicative of heterogeneous fill material rather than the effect of site operations. If the metals had been introduced into the soil by site activities, the higher concentrations would be expected in the near surface soil samples. The occurrence of PPMs is virtually limited to the central and eastern portions of the site, areas where distinct fill material exists. For these reasons, Textron recommended in its June 1988 report that any cleanup activity should not include PPMs in soils. NJDEP concurred with this position in its January 30, 1989 response letter to Textron.

As previously stated, some of the TPHC, BN or PAH contamination is likely associated with fill material because these compounds were detected in areas of the site where no apparent source exists. For example, significant concentrations of TPHCs were detected in soil samples collected from background areas. BNs or PAHs were also detected in several background or unexpected locations. The strategy for addressing these compounds and the agency's response were summarized in the preceding section.

3. Shallow Ground Water

Despite the presence of VOCs and TPHCs within the shallow soils of the fill unit, little contamination has been detected in the shallow ground water. The pavement which covers the majority of the site is preventing the infiltration of rain water from the surface, thus inhibiting the migration of contaminants from the soil matrix into the ground water. TPHCs at levels slightly above the informal ECRA action level are present only in the upgradient background wells and are attributable to off-site sources. With one exception, the only dissolved PPM detected at concentrations above the informal ECRA action level is selenium, the source of which appears to be Newark Bay. BNs have never been detected in ground water.

VOCs detected in the shallow ground water are for the most part related to contaminated on-site soils, but the impact appears to be limited in areal extent. VOCs have been detected only in 5 of 20

shallow wells (MW7, MW10, MW11, MW13, and MW20). Toluene and/or ethylbenzene were generally the detected constituents of concern, although low levels of benzene were occasionally reported. Except for MW10, the concentrations of total VOCs in the shallow ground water are relatively low. Based on the results of soil samples collected from MW10 and MW13 during well installation, it appears that the presence of VOCs in these wells is related to localized soil contamination. VOCs detected in MW20 are likely related to migration from MW10 or to nearby soil contamination. Low levels of VOCs detected in MW7 and MW11 could be related to migration from off-site sources of contamination or possibly to historical activities within the large tank farm (AEC 26).

As part of the Phase II Sampling Plan, mathematical analyses were performed to evaluate the potential migration of VOC contamination in the shallow aquifer. The results, presented in the June 1988 report, indicate that VOCs at the nearest receptor boundary (Newark Bay) would be insignificant and pose no risk to public health or the environment. Given these results, along with the fact that VOCs are present at relatively low levels in very limited areas of the site, ground water remediation was not proposed by Textron in the June 1988 report.

NJDEP indicated in its January 30, 1989 letter to Textron that the proposal to not remediate shallow ground water could not be accepted at this time because no actual soil remediation was

proposed. Instead, NJDEP requested that Textron conduct quarterly ground water sampling from wells MW10, MW13, MW14, MW15 and MW20, and that this monitoring continue for a period of one year after source control/removal has been implemented. NJDEP stated that the need for ground water remediation will be evaluated at that time.

Textron continues to believe that shallow ground water remediation is not warranted for the reasons stated previously. In addition, if ground water cleanup were ultimately required, traditional pump and treat methods would be inappropriate due to off-site sources of contamination and the extensive tidal influence of Newark Bay. Pumping the ground water would only create a sink, drawing additional constituents to the site. Moreover, the source of VOCs affecting the shallow ground water should be extensively reduced if in situ bioremediation can be implemented successfully at this site. As discussed in Section II, results of preliminary laboratory and field testing for in situ bioremediation indicate that this soil treatment technology is a feasible and effective remedial method.

Consistent with NJDEP's request, however, quarterly ground water sampling from the referenced wells began in April 1989, and all data have been provided to the agency as it is acquired. A full analysis of the results of quarterly sampling will be made after implementation of the Cleanup Plan for soils.

4. Deep Ground Water

The analytical results of ground water samples collected from wells monitoring the deep aquifer indicated that the deep ground water beneath the site has not been affected by site activities. Lead, selenium and VOCs were detected at concentrations above the informal ECRA action levels in one monitoring well, but only during one of three sampling rounds. In addition, TPHCs at a concentration just slightly over the informal ECRA action level were detected in one other deep well during one sampling round. A number of factors likely caused the incidental detection of these compounds (field acidification of samples, tidal influence of Newark Bay, contamination during well installation, etc.), but none are linked to past industrial operations at the site. Therefore, no remedial action with respect to the deep aquifer is required or was proposed to NJDEP in the June 1988 report. The agency did not take exception to this conclusion in its January 30, 1989 letter.

III. CLEANUP PLAN

A. Introduction

This section describes the proposed Cleanup Plan for the Spencer Kellogg site. The plan consists of a conceptual design for cleanup of VOC- and TPHC-contaminated soils and discusses additional tasks that must be completed to develop final remedial designs. Final designs and a full-scale implementation work plan will be developed after NJDEP approval of the proposed Cleanup Plan, completion of the proposed additional laboratory and field studies, and agreement between NJDEP and Textron that in situ bioremediation will effectively treat VOCs and TPHCs. The Cleanup Plan consists of the following components:

- The overall objectives of the proposed Cleanup Plan;
- The preferred cleanup actions for contaminated soil;
- An alternative cleanup remedy;
- A discussion of necessary additional soil treatment testing;
- A preliminary schedule to implement the Cleanup Plan; and
- A preliminary cost estimate for the proposed cleanup activities.

The Cleanup Plan proposes in situ bioremediation as the preferred remedial action. Limited excavation in selected areas with off-site disposal is included as part of the proposed remedy. This plan also presents and discusses the anticipated tasks necessary for implementation

and provides a preliminary schedule and cost estimate. An alternative remedy, consisting of excavation of all target areas (as described below in Section III.B.2.) with off-site disposal, is proposed should in situ bioremediation prove unsuccessful after additional testing, or if Textron decides not to pursue bioremediation for any other reason and elects to pursue the alternative remedy.

B. Cleanup Objectives

For the purposes of analyzing remedial options and developing this Cleanup Plan, contamination was initially defined relative to the informal ECRA action levels (Appendix A). Although these informal action levels have been and will continue to be used in our analyses to simplify the presentation and interpretation of analytical results and to serve as a target for cleanup options being considered, neither Textron nor ENVIRON suggests that these action levels represent an appropriate basis for site cleanup. Rather, the results of the proposed laboratory and field testing will be used to indicate the effectiveness of treatment using in situ bioremediation and will be presented in the final design with an analysis of relevant time, cost, health and environmental factors.

1. Target Contaminants and Cleanup Levels

The contaminants targeted for treatment in site soils are VOCs and TPHCs. As discussed in Section I, these compounds appear to have been introduced into soils of the fill unit in many of the

tested AECs by historical industrial operations and activities at the site. The occurrence and relative concentrations of these compounds are generally consistent with known and possible industrial activities within certain AECs.

VOCs will be considered the primary target contaminants because shallow ground water in limited areas of the site has been affected by soils contaminated with these compounds. TPHCs will be addressed equally in those areas targeted for treatment. However, only the petroleum-based hydrocarbons, such as fuel oils, lubricating oils and gasoline, are of concern. Non-petroleum based hydrocarbons, such as fish and vegetable oils, will also be degraded, but the final levels of reduction reached are less important because these compounds are non-hazardous and are not ECRA-listed hazardous substances.

In the laboratory treatability tests, concentrations of VOCs and TPHCs (measured by GC/FID) after treatment were below the respective informal ECRA action levels under some test conditions. Because the biodegradation of these compounds was examined using soil slurries, it is not possible to predict at this time the contaminant levels that will remain in the field following treatment or how long it will take to achieve an acceptable level of treatment. Based on vendor experience at other sites, it is anticipated that a satisfactory level of treatment will be achieved in one to two years of operation.

Reduction in the concentrations of these contaminants in the treated soils ultimately may be limited by the efficacy of the proposed treatment (i.e., in situ bioremediation may not be capable of achieving the informal ECRA action levels for all contaminants in a reasonable timeframe), including the difficulty of the physical transport of nutrients and oxygen through the unsaturated soils to achieve uniform treatment. After completing the additional laboratory and field studies, a better understanding of the actual achievable levels in the field and the effectiveness of treatment across the site should be obtained. Ultimately, treatment will be carried out to the extent practical; the time at which treatment will be considered complete will be established by considering the percent of contaminant reduction achieved, the further reductions achievable with additional time, and the cost of additional treatment. An analysis will be presented to NJDEP with the final design assessing the health and environmental significance of the residual VOC and TPHC levels. Textron would like to emphasize that in situ bioremediation will not be implemented unless NJDEP agrees that this approach is appropriate to establish acceptable levels of treatment using this innovative technology.

2. Target Areas

Plate 4 presents the areas targeted for cleanup under this plan. These areas contain VOCs and, in many cases TPHCs, above the

informal ECRA action levels. A number of AECs beyond the targeted areas (see Plate 3) contain concentrations of TPHCs above the informal ECRA action level, but VOCs are not present. These areas, however, are not targeted for cleanup because petroleum hydrocarbons are not impacting ground water and the levels of petroleum-based hydrocarbons (generally between 200 and 1,000 ppm) are not considered to pose unacceptable environmental risks. Similar levels of TPHCs have been allowed to remain in place at other ECRA-regulated facilities.

Table 2 summarizes the areas and volume estimates of soil targeted for cleanup. The area and depth of soil in each AEC have been derived based on the results of Phase I and Phase II sampling, field observations during these investigations, depth to ground water, and knowledge of site operating history. For purposes of planning, conceptualizing cleanup activities, and developing a preliminary cost estimate, these soil volumes were derived using the informal ECRA action levels to make judgments regarding the lateral extent of contamination associated with each AEC. In some instances, areas targeted for remediation were extended beyond the original AEC demarcation based on sampling, judgments as to the possible extent of contamination related to an AEC, or until a physical barrier, such as a building or wall, was reached. The depth estimates in each area correspond to the depth to water. Consistent with prior NJDEP direction, soil sampling was not

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TABLE 2: Summary of Estimated Soil Volumes Requiring Remediation

AEC	Area (ft^2)	Depth (ft)	Volume (yd^3)
AEC 1*	1,350	3	150
AEC 3	7,999	3.5	1,037
AEC 4	4,990	3.5	647
AEC 7	1,230	3	137
AEC 12	1,107	2.5	102
AEC 14	3,778	2.5	350
AEC 15	797	2.5	74
AEC 16	6,307	2.5	584
AEC 17	4,701	3	522
AEC 19	3,210	2.5	297
AEC 21	5,150	2	382
AEC 23	896	2.5	83
AEC 25	5,098	2.5	472
		TOTAL --	4,837

* AEC 1 has been included in the targeted areas due to estimated VOC concentrations greater than 1 ppm. The data values provided on Plate 3 do not include estimated concentrations. Estimated VOC concentrations were reported for several other AECs (7, 12, 16, 19, and 25). As indicated above, and based on the data provided on Plate 3, these areas already have been targeted for remediation.

conducted below the water table. Therefore, remedial activities are limited to the unsaturated zone. These volumes may change depending on actual field conditions (i.e., additional data collected during implementation) and the final site treatment levels accepted by NJDEP.

As indicated on Plate 3, soil samples from AEC 9, AEC 22 and from an area adjacent to AEC 18 contained total VOC concentrations in excess of 1 ppm. These areas, however, have not been targeted for cleanup for several reasons. As discussed in ENVIRON's March 1987 report entitled "Presentation of the ECRA Sampling Plan Results", AEC 9 represents a small area beneath a former hole in the floor of Building 16. Although soil sampling was proposed, only resinous material could be collected, and the detected levels of VOCs were not representative of actual soil conditions. Consistent with prior NJDEP direction, however, any environmental impact resulting from potentially affected soil beneath a building will be investigated and monitored via the ground water due to the severe physical limitations of sampling and/or removing soils beneath floors of buildings. Therefore, this area has not been targeted for remediation.

AEC 22 is a concrete pad on which 1285 Premix was stored in drums. As part of the Phase I sampling program, a soil sample from the dirt on top of the pad was proposed. Prior to sampling, however, the dirt was removed and placed in a large pile beside the

pad. Although the sample was collected from the dirt pile and low levels of VOCs were detected, this material was ultimately removed by NL Industries. Therefore, further action is not necessary.

MW6 was installed in an area adjacent to AEC 18 to monitor the quality of ground water entering the site. During well installation, one soil sample was collected above the water table and analyzed for VOCs. As indicated on Plate 3, a low level of total VOCs was detected in this sample. However, this area has not been targeted for cleanup because the VOCs are not related to known industrial activities, have not been detected in other samples from this portion of the site, and have not created a ground water impact.

C. Proposed Cleanup Actions

1. In Situ Bioremediation

Based on the favorable results obtained from the laboratory and field tests described in Section II of this plan, in situ bioremediation appears to be a feasible treatment technology to address VOCs and TPHCs in soil and is proposed for all of the targeted AECs, except for AEC 12. Physical limitations precluding the use of in situ bioremediation in this AEC are discussed in the next section.

During implementation, buffered nutrient solutions will be delivered to the target areas via buried infiltration galleries or trenches, injection points, or surface irrigation/flooding. In any

particular area, one or several of these introduction techniques may be used as necessary to effectively treat subsurface conditions. Aerobic conditions also will be maintained in the treatment area, either by drawing fresh air through the unsaturated soil using vents with blowers, or using passive venting techniques. The progress of treatment can then be monitored using air samples, as discussed later in this section. To the extent possible, in situ bioremediation will be implemented in all of the target areas simultaneously. Final remedial designs will be developed after completing the additional laboratory and field testing.

2. Limited Excavation and Off-Site Disposal

Contaminated soil will be excavated from two AECs and transported off-site for disposal. In AEC 4, surface soil is heavily contaminated with spilled resins and blended products. The soil sample collected for the laboratory treatability study from this area had a low soil pH and a low bacterial count, and appeared to inhibit the extent of treatment when included in one of the laboratory test runs. In addition, the nature of this surface contamination, if left in place, would prohibit the percolation of the buffered nutrient solution to the underlying unsaturated soil. Therefore, approximately the top 6 inches of soil will be scraped away and transported off-site for disposal at an appropriate commercial facility. The remaining soil in AEC 4 will then be

remediated via in situ bioremediation. The volume of soil from AEC 4 to be disposed off-site is estimated to be 90-95 yd^3.

The second area to be excavated is around the perimeter and to a limited extent under Building 4 (AEC 12). Similar to the surface soils of AEC 4, resins and blended products are present to such an extent that it would be very difficult to create the environmental conditions necessary to promote biodegradation. Soil will be removed to the water table (approximately 2.5 feet) from this AEC and disposed at an appropriate off-site facility. The volume of soil from AEC 12 to be removed is estimated to be 100-105 yd^3. In situ bioremediation of soils beneath the resinous materials in this area is not proposed because of limited access under Building 4.

3. Alternative Site Cleanup Actions

As a contingency, in case the proposed cleanup remedy of in situ bioremediation cannot be implemented successfully in the field or because Textron for any other reason decides not to pursue in situ bioremediation, excavation and off-site disposal is proposed as an alternative remedy for the target areas. Soil in the target areas would be excavated to the water table and the areas backfilled and repaved.

D. Proposed Additional Testing

Additional laboratory and field tests are required to address several critical issues in developing a final design of the system(s) to implement in situ bioremediation. A description of these tests is provided below.

Soil column tests to be conducted in the laboratory are necessary to obtain data under simulated in situ conditions. Data will be collected to determine the rates and extent of treatment that can be expected in the field, to evaluate more carefully the potential for metal leaching as a result of treatment, and to establish the appropriate nutrient addition rate and frequency for the field test. At this time, it is anticipated that two or three replicate columns (approximately 2-inch diameter, 2-feet tall each) will be set up with sieved or hand-sorted (to minimize loss of VOCs) soil (to remove gravel and large debris) collected from the site. The soil used to fill the column will be analyzed for VOCs and TPHCs as initial reference points. Based on the preliminary laboratory test results, a buffered ammonia and ortho-phosphate nutrient solution (using tap or site ground water as the water source) will be applied to the soil columns.

The columns will be monitored using CO_2 evolution as an indicator of biodegradation and by analyzing leachate, if any, for soluble components such as metals, VOCs, or nutrients. The columns will be operated until the CO_2 evolution and leachate monitoring indicate that contaminant degradation has leveled off. At that point, a column will be

sacrificed to determine the reduction in target contaminants. Further degradation in the remaining column(s) will be measured after another nutrient loading has been applied. The remaining column(s) will be sacrificed when CO_2 and leachate monitoring indicate that further degradation has leveled off. At that time, VOC and TPHC analyses will be performed on the soils. It is anticipated that the column testing will run for approximately two months.

The field test will yield practical information on the actual contaminant reduction levels achievable and the time needed to achieve these levels, identify problem areas in implementing this technology to factor into the final design, provide a greater level of certainty in predicting performance, and provide a sound basis to estimate the actual costs associated with implementation. The field test will be conducted in AEC 21 because this area is away from most of the daily plant activity and the soil contains a good cross-section of contaminants found at the site. For purposes of the field test, open infiltration galleries will be installed perpendicular to the ground surface slope. They will be bermed and have temporary covers to provide access, yet prevent the infiltration of storm water runoff. Nutrients will be introduced at 1-2 gpm as in the initial field test and at a frequency to be established from column testing. A passive venting system using wind turbines may also be installed to draw air through the unsaturated soil. Air samples from these vents and soil gas analysis will be the predominant method of routine monitoring. In addition, soil sampling will be conducted at a

frequency sufficient to monitor biodegradation. It is expected that the field test will run for up to six months until residual contaminant concentrations level off.

E. Remediation Monitoring and Post-Cleanup Sampling

A sampling plan to monitor the progress of the cleanup and to verify that a satisfactory level of treatment has been achieved will be provided as part of the final design work plan. This sampling plan will be based on the experience and information gathered during the laboratory and field tests and will consist of soil gas and soil sampling. The sampling plan will focus on the two VOCs of concern, toluene and ethylbenzene, and TPHCs.

F. Schedule

This section outlines the anticipated sequence of activities to implement the proposed Cleanup Plan. These activities include gathering additional information through the proposed laboratory and field tests that are needed to finalize remedial designs.

Figure 5 is a preliminary schedule of activities planned for the next phase of work and includes an estimate of the timing for implementation sitewide. As indicated on the schedule, the additional laboratory tests will be initiated after NJDEP approves this plan; however, Textron will plan these tasks so that the schedule can proceed as expeditiously as possible once NJDEP approval has been received. A

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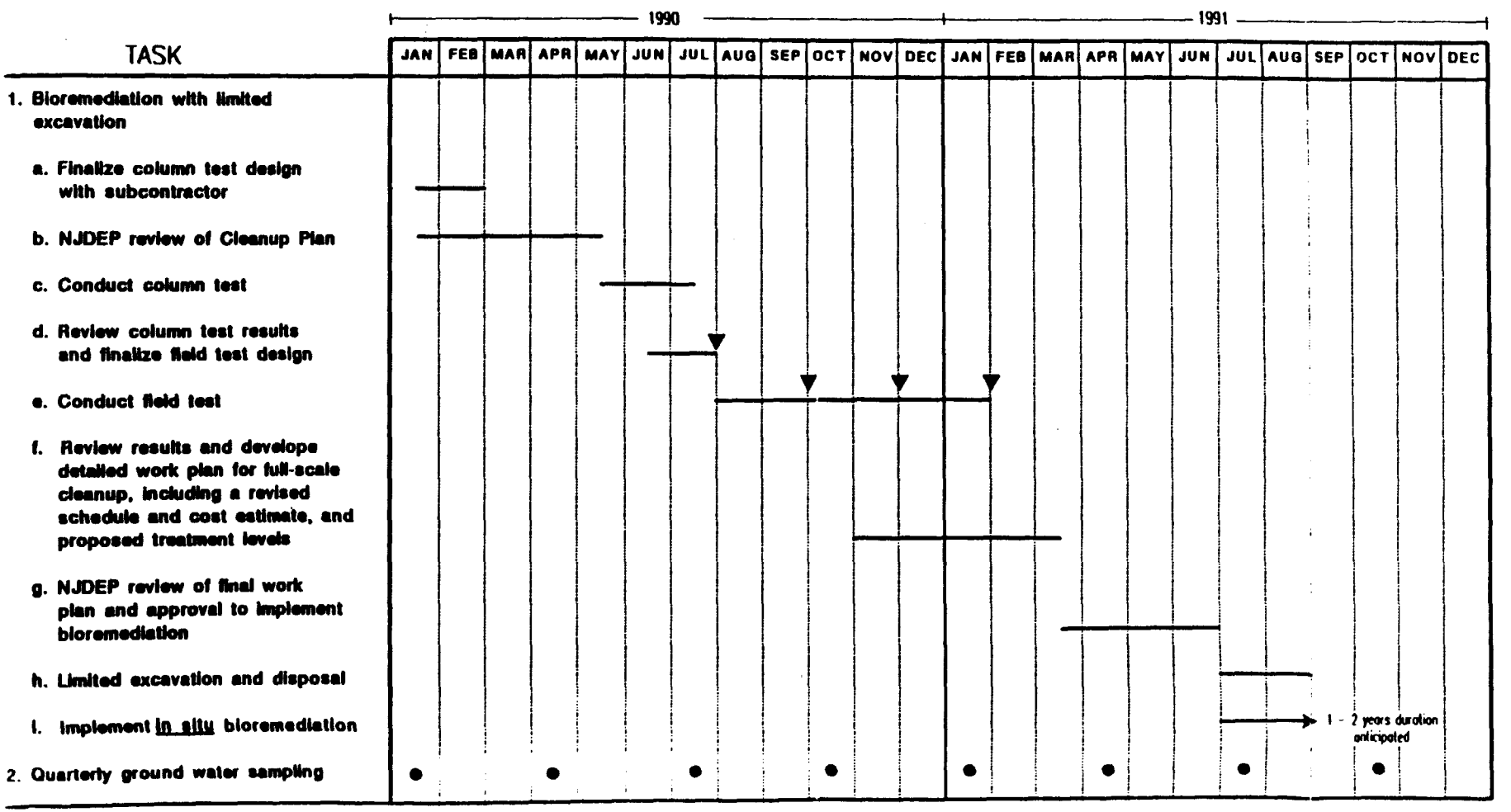
Figure 5: ESTIMATED SCHEDULE



NOTES

Limited excavatio removing a total AECs 4 and 12.

▼ Denotes submiss progress report

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specific schedule for full-scale implementation of cleanup will be provided to NJDEP as part of the final remedial design for NJDEP approval. At this stage, however, it is possible to outline the overall sequence of activities as follows:

- Continue quarterly ground water sampling;
- Design and conduct laboratory soil column tests;
- Design and conduct field tests for biotreatment of soils;
- Design final bioremediation systems for soils;
- Develop a work plan for implementation of the cleanup;
- Receive NJDEP approval of final remedial designs and work plan; and
- Implement full-scale cleanup.

In addition, ENVIRON will submit progress reports to NJDEP approximately every two months, as indicated in Figure 5, until submission of the final cleanup design. Progress reports will again be prepared and submitted to NJDEP during full-scale implementation, which is anticipated at this time to have a one to two year duration.

G. Cost Estimate

The cost estimate is based on information available at the current time. Final costs are dependent upon actual labor and material costs at the time of implementation, actual site conditions encountered during

construction and excavation, competitive market conditions, final project schedule, final design of the proposed cleanup actions, regulatory requirements, actual quantities of soils to be treated and cleanup levels ultimately accepted by NJDEP. As a result, the final cleanup costs may vary from the estimate presented here.

Table 3 presents the estimated total capital and operating cost of the proposed Cleanup Plan. As discussed below, the total cost represents the expenditures to construct the remedial systems and to conduct treatment. Both direct and indirect costs have been considered in the development of capital costs. Direct costs include items such as construction costs and expenditures for equipment, materials, labor, transportation and disposal. Indirect costs, such as engineering, permitting, and construction supervision, are added to the total direct costs using standard factors.

It has been necessary to make several assumptions to provide a basis for the cost estimate. The following general assumptions and considerations are incorporated into the cost estimate:

- An estimate of $100,000 has been included for additional laboratory and field tests.

- The cost for <u>in situ</u> bioremediation is based on a unit cost of $\$150/yd^3$ for installation and treatment. Vendor claims of possible unit costs for <u>in situ</u> bioremediation range from $70 to

Spencer Kellogg Facility, Newark, New Jersey

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TABLE 3: Cost Estimate for Proposed Cleanup Plan

Cost Item	Costs ($)
Additional Testing	$100,000
In Situ Biological Treatment	696,300
Excavation & Backfilling	11,200
Transportation and Disposal	79,000
IMPLEMENTATION SUBTOTAL:	$886,500
Health and Safety Contingency (10%)	$88,700
Scope Contingency (20%)	177,300
IMPLEMENTATION TOTAL:	$1,152,500
Engineering and Design (10%)	$115,300
Construction Services and Supervision (7%)	80,700
TOTAL COST:	$1,348,500

$150/yd^3$. This unit cost includes typical operating and maintenance costs, such as electrical, nutrient and monitoring costs.

- Excavation (including all site work, soil staging, equipment and labor) cost is based on a unit cost of $25/yd^3$ based on the high end of ranges provided orally by vendors and to account for possible difficulties in working in active plant areas. Backfilling (including purchase, transport on-site, placement and compacting) cost was determined using a unit cost of $25/yd^3$. It was assumed that a 30% greater volume of fill will be required to achieve 195 yd^3 after compaction (i.e., 253 yd^3 of clean backfill will be required).

- Transportation and disposal cost was estimated using a unit cost of $270/ton and an in-place soil density prior to excavation of 1.5 $tons/yd^3$.

Because the Cleanup Plan is conceptual and based on currently available data, a contingency is included to account for unknown conditions. The contingency accounts for a variety of factors that tend to increase costs associated with construction, including the economic/bidding climate, special conditions required to maintain normal facility operations during implementation, adverse weather conditions,

unknown hydrogeologic conditions, accessibility problems, strikes by material suppliers, issues concerning contractor liability and insurance coverage, etc. A scope contingency, to account for possible changes that may occur during final design and implementation, and a health and safety contingency, to address costs associated with working in an industrial or contaminated environment, have also been included. Allowances for cost escalation (inflation) and unusual technical difficulties are not included in the estimate.

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